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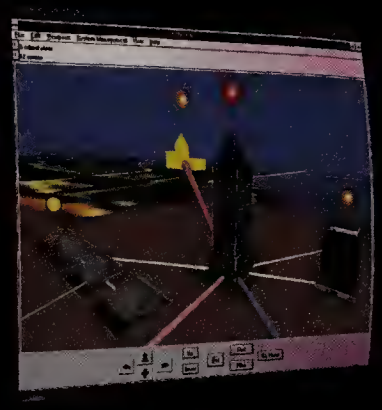

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WEBMASTER®

October 1996
VOLUME 1, NUMBER 4

FEATURES

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▼ External Web sites remain clearly public, but internal sites are becoming something less than private. Increasingly, companies are seeing the payoff from expanded intranets that allow selected outsiders through their firewalls to share a corner of their corporate estates.

By Anne Stuart

The Ultimate Webmaster

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▼ Tim-Berners-Lee, the man who gave away the Web, looks back on seven years of change and forward to the Internet's future as a universal business tool.

By Scott Kirsner

Will Your Business Model Float?

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▼ Companies have all kinds of ideas about how to make money on the Web, from advertising to retail to subscriptions. *WebMaster* examines the pros and cons of established strategies, as well as some innovative approaches that may redefine online business.

By E.B. Baatz

Cover image by Eric Yang

Now Playing

Our interactive forum, "The Professional Webmaster: Roles, Responsibilities, Relationships," runs through Oct. 21 at ***www.webmaster.com/forums/career.*** The forum aims to answer many of the questions that keep our readers awake at night:

- What do webmasters do?
- Where do you find them?
- What skills do they need?
- How much do they earn?
- Should they be certified?
- Where's the profession going and how fast?

Drop by with your own questions and comments, and while you're there, check out our collection of helpful resources. We look forward to seeing you.

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Back Forward Home Edit Reload Images Open Print Find Stop

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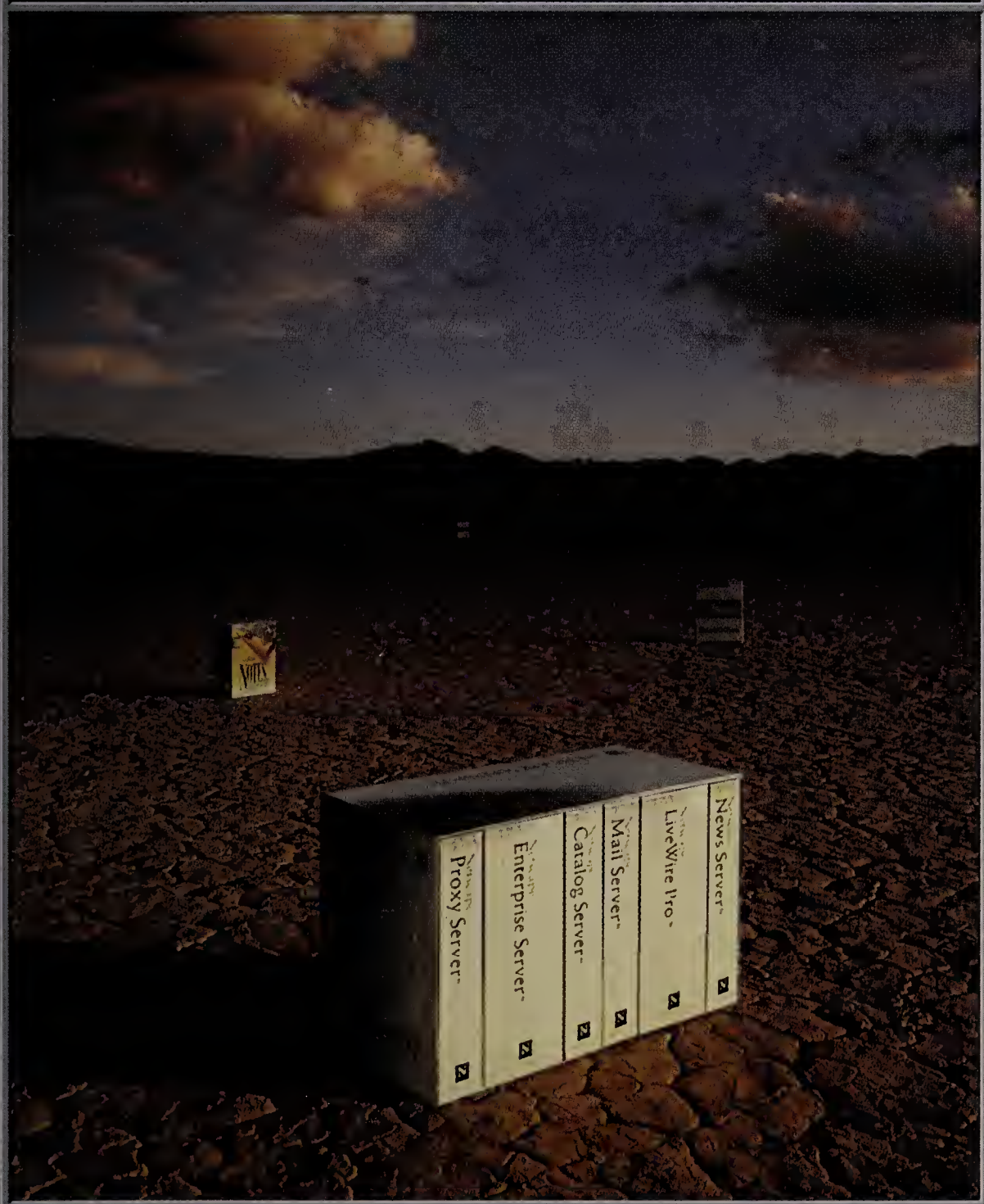

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For two years, the Internet Marketing Discussion List helped lay the foundation for a thriving new industry. Now it's gone, and a gaggle of successors is primed to take its place.

By Jim Sterne

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Taxation Without Organization

As state and local governments scramble for revenues, the online industry is an irresistible target for taxation. The result is a high-tech hodgepodge of conflicting, confusing and just plain crazy regulations.

By G. Kent Johnson Jr.

Field Report

Java Gets Real

Although it's been more than a year since Java promised to rewrite the rules of the Web, applications that exploit the language are in short supply. Three programmers who've actually put Java to work tell us what they've learned.

By Art Jahnke

"We found a fast, simple way to put inventory planning, customer service, and order entry on the web.

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"Just for the sake of argument, let's say there was a time we used spreadsheets for inventory planning, a database for customer records, and a one-off application for order entry. And let's say I figured out how to tie all those applications together into one program. Which just happens to run on the web. Well, there's a hot new product that lets you do all that, but I'm afraid you're not going to hear the details from me."

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Are You Being Served?

WE WERE SHOPPING for furniture a couple of weeks ago, and my six-year-old, as usual, was entertaining himself by trying out the reclining chairs. He was frenetically pushing the buttons—which seem to have become standard these days—causing the chairs to heat up or vibrate, slide backward or forward, or to raise or lower their footrests. When we finally showed him our selection, a plain maple rocker, he was visibly disgusted. "What good is a chair," he complained, "if it doesn't have remote control?"

A variation on that judgment is increasingly being heard among the ranks of experienced Internet users, for whom the static Web-page-as-marketing-vehicle is no longer good enough. We've all been told that the Web is a great and glorious business tool, which sort of suggests that you ought to be able to do business on it. Now I don't know about you, but my idea of doing business isn't reading MicroTechTronix Inc.'s corporate history or its recent press releases ("MicroTechTronix Named Community Citizen of the Year for Participation in 'Zoo Pal' Program") or—unless I'm a shareholder—its annual report. Sure, it's important to have those things up there. But if that's all there is, then I, as a customer, am going to feel seriously inconvenienced.

These days, businesspeople aren't going to the Web just to be marketed to. Many are going there to transact business. And one of the strongest selling points a company can have is to make sure its online visitors can perform the entire transaction process—from pâté to petit fours—right where they are.

If I take the trouble to access MicroTechTronix Inc. online, I want to be able to find out everything imaginable about its products, yes. But I also want to be able to configure an order using a rules-based generator that tells me if all the parts I'm selecting work together. I want to check my selection's availability, and if it's on back order, I want recommendations for substitutes. I want to be able to price my order, place it, and track it once it's been placed. And if the order is wrong or if I can't figure out how to get the damn thing to do whatever it's supposed to do, I want access to an online help desk that will turn my problem around, pronto.

If I can do all those things on the MicroTechTronix site, I am going to develop some pretty warm feelings toward the company. That, of course, is what marketing wants.

But marketing is not accustomed to helping me do all those things. Rather, marketing is used to cultivating those warm feelings by burnishing the company's image though advertising, direct mail, savvy positioning and other methods. Certainly marketing's job is

easier if the folks who are taking orders and answering questions are doing a good job. After all, if the reality contradicts the message too often, the company's image will suffer no matter how splashy its promotions.

But essentially, marketing thinks about us, the company. Customer service thinks about you, the customer. And until recently, rarely the twain did meet.

Now we have the World Wide Web, where customers can interact with a company in the same place they experience its marketing message. And suddenly

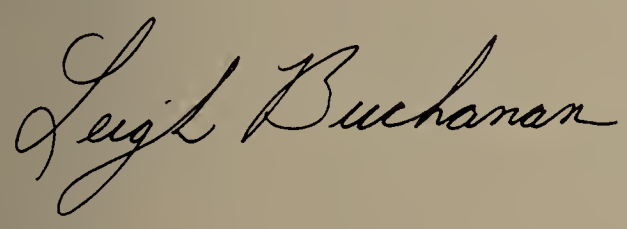
PHOTO BY JOHN SOARES

www.web-master.com/

every word of that message, every boast, every claim, can be tested by how the company serves customers at the site. That means marketing has more to worry about than whether the corporate logo appears on every page and whether the site's organizational metaphor is sufficiently innovative. ("It's designed to resemble a futuristic shoe store; click on the antigravity boots to navigate.") Suddenly, marketing has to worry about customer service. And that means it has to worry about technology.

Many companies know that if they hope to succeed on the Web, their marketing people, IS people, and customer service people will have to bond like crazy. But it's going to take that and more—notably, a true mental shift on the part of both IS and marketers. IS, which is accustomed to developing for a captive audience, will have to begin designing systems and interfaces for end users it doesn't know and who may have no compelling reason to use its services. And marketing will have to think less about making a razzle-dazzle impression and more about day-to-day utility, efficiency and reliability.

When Federal Express introduced its Web-based package-tracking application last year, customers were impressed. Today, many are disappointed if you don't do more. Maybe that next press release should say, "MicroTechTronix Inc. Offers Full-Service Web Site: Now Customers Can Do It All!" That's one press release I'd read.



Leigh Buchanan
Executive Editor
buchanan@cio.com

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On a quest for the perfect tattoo

I immediately found an ideal viper motif on the Tattoo Resource Page, yet I was curious what Maximillian's On-Line Tattoo Parlor might suggest — which actually expanded my thinking into the pterodactyl realm. Intrigued, I went on to peruse the Design Your Own Tattoo Page and — influenced by a well-stenciled midriff from the Bowery on the History of the Tattoo Web Site — came up with something no one had done before. In fact, everyone on the Tattoo Talk chat page was going ga-ga over it. So I started thinking tattoos might be my calling, when I scrolled down to a Web site for the Ministry of the Tattoo in Monterey, where the entire parish is visibly tattooed. Just one potluck dinner and **I ended up finding God.**

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PROFILE

The Softest of Sells

THE ONLINE marketing campaign for Clearly Canadian Beverage Corp.'s Orbitz drink is either wildly innovative or just plain hard to swallow. To paraphrase the *Seinfeld* ads, it's a site about nothing.

The product itself is unusual, a fruit-flavored drink with flavored gel spheres suspended in the liquid as though they're defying gravity. Technologically, the concept is cool: The spheres are the same density as the liquid, so they don't settle. But gastronomically, it's a leap of faith. The gel globs hit your lower teeth and tongue and slide down your throat if you don't chew them. And you're not supposed to chew liquids.

When Orbitz's Web site (*www.orbitz.com*) debuted in April, it was a vapor space. Besides the drink's animated logo, a cryptic fable about a planet inhabited by aliens called Orbitzians, and "interactive" icons that did nothing when clicked on, there was nothing there. When the beverage launched in New York, Arizona, Massachusetts and Ohio on Memorial Day, more content was added but no context. Site visitors are now greeted by a survey composed of questions like, "How far will a grapefruit fly?" a colorful user interface that's far from intuitive and *Bizarro*-like comic panels drawn by Dirk Van Stralen.

All that mystery is intentional. "I don't intend to use the Web site to tell people what Orbitz is," says Jonathan Cronin, marketing director for Clearly Canadian. Instead of using the site to help market Orbitz in the traditional sense, the company created it to be an entertaining standalone entity. "We want to be irreverent," says Cronin. "We want to use it for entertainment and news, not as a selling tool."

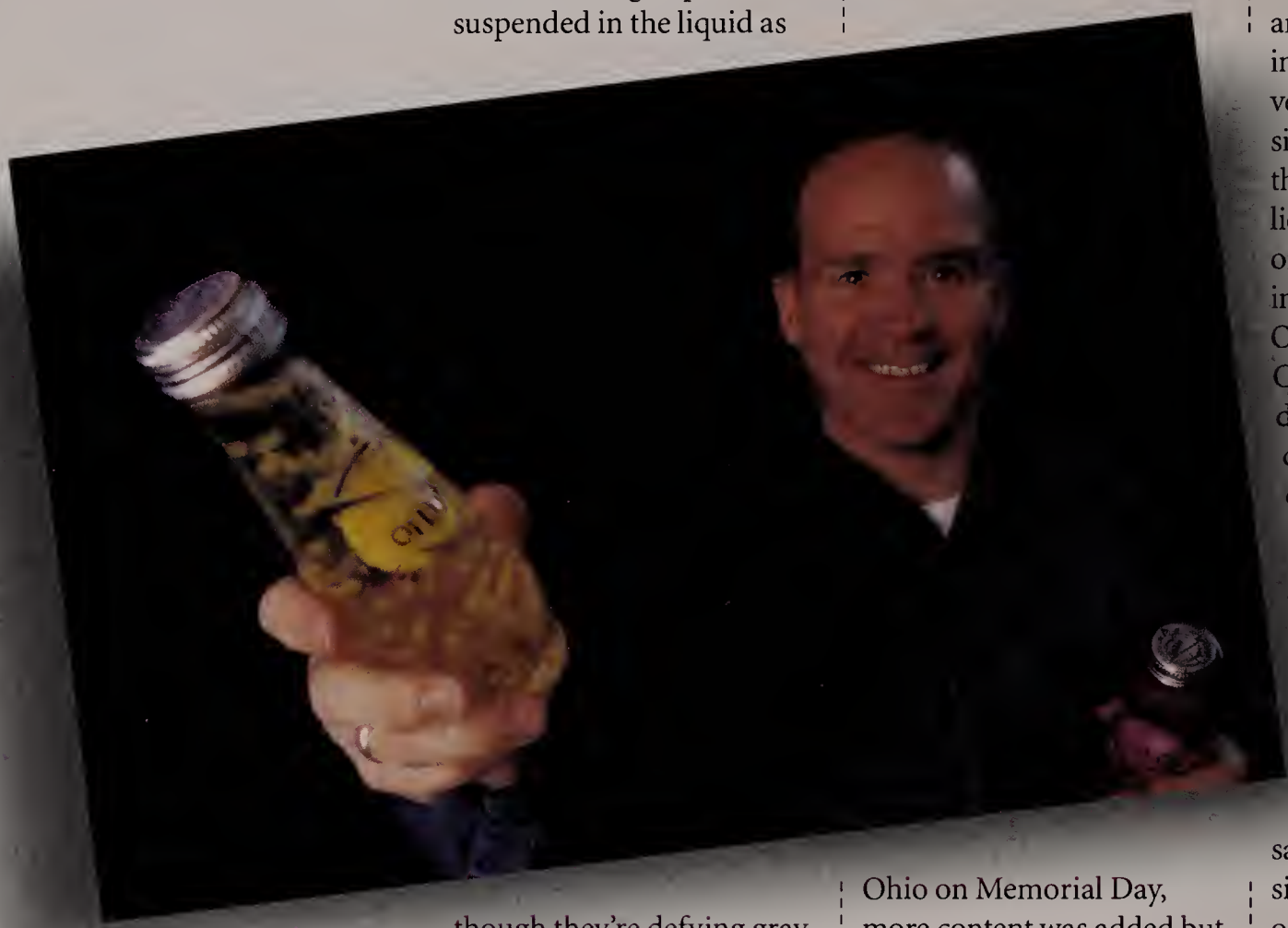
But while Clearly Canadian isn't interested in marketing Orbitz on the site, it is very interested in using the site's existence to position the drink. The company believes that by printing a URL on the bottles and marketing materials, it can raise Orbitz's target age group, Cronin says. "We took the drink technology and were concerned we'd get a kid drink," he says. "Using the address on [Orbitz] at the point of sale aged the product targetwise. It's now the mind of a 17-year-old."

Kim Cleland, associate editor of *Advertising Age*'s Interactive section, says she doesn't think the site helps establish the brand or promote Orbitz.

"People should walk away from [the site] having learned something," says Cleland. "I think it's going to annoy people more than anything."

Cronin admits that Clearly Canadian is still experimenting with the Web page. "We're going to make some mistakes," he says. "The Web lets you do that."

–Heath Row



UNSETTLING SODA: Clearly Canadian's Jonathan Cronin says the mystery of the Orbitz Web site is intentional.

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How to Succeed In Business Without Really Graduating

INCREASINGLY, MBAs and college-age entrepreneurs are bypassing the mailroom approach to business in favor of starting their own companies, sometimes earning their first million before earning their sheepskins. Web-based endeavors are particularly successful with this group because of the low development overhead and accessible technology.

The most celebrated student startup is, of course, Yahoo, which interrupted the Stanford educations of David Filo and Jerry Yang. Others have followed, including Jed Katz, co-founder of Rent Net (*www.rent.net*), an interactive database of more than 847,000 rental properties in North America. Katz sold Rent Net to CUC International Inc. for $3 million in stocks and cash before graduating last May from the Haas School of Business at the University of California at Berkeley.

Also in May, a group of Berkeley students and scientists formed Inktomi Corp. to market the parallel-processing and Web database integration technology behind the HotBot search engine (*www.hotbot.com*), a joint venture with HotWired Ventures LLC. Paul Gauthier, on leave from the Berkeley computer science PhD program, says the university environment was conducive to developing Inktomi's index technology. In fact, Inktomi had to license parts of its search engine technology from the university because it was developed as part of Gauthier's coursework. Berkeley "seems very helpful and eager in getting the technology into the industry," Gauthier says. "Academia gives you a lot more freedom to follow [unexplored] avenues."

On the other hand, being a student while running your own business can be exhausting, pulling you in too many directions at once, according to Matt Villano, co-founder of Web site development firm Locomotive Communications (*www.pyrotechnics.com/~loco*). "The demands of a business and college really don't go hand in hand," says Villano, a senior majoring in journalism at Northwestern University. But "while it's a pain sometimes, it's a pain that is heaven. Being a student and carrying business cards for your own business is the greatest feeling on earth."

PHOTO BY JOHN SOARES / ILLUSTRATION BY ALISON SEIFFER

Looking for Mr. Goodsite

It's the Web version of Yin and Yang (not Jerry): For every site, there's a perfectly complementary advertiser, and the goal is to bring the two together. The trick is finding your match, a problem addressed by a new category of Web services: advertising yentas.

If you're looking to sell ad space, for example, you might want to consult Narrowline Inc. (*www.narrowline.com*). The company applies proprietary market research, information technology, and demographic and psychographic data to analyze and rate its clients' Web sites. Then it uses that information to handpick advertisers that will complement those sites' content and provide added value to visitors.

Buyers, too, have their own matchmaker in the form of Focalink Communications Inc.'s (*www.focalink.com*) MarketMatch service. MarketMatch draws on The McKinley Group Inc.'s Magellan database of more than 10,000 Web sites and includes profiles of more than 500 heavily trafficked players that sell ad space. Taking into consideration these sites' content, audience and quality, the service can help online advertisers buy wisely and reduce their costs.

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Trading Places

While most Wall Street investors certainly are flush, they are also, shall we say, beyond the first flush of youth. Figures from the New York Stock Exchange show that the typical investor is 57 years old and has an annual income of $100,000. That demographic is one more thing the Web is changing, says Stephen Killeen, director of marketing at PC Financial Network, a service of Donaldson, Lufkin & Jenrette Securities Corp., whose online brokerage is named Magic Broker (*www.magicbroker.com*).

A dozen online stockbrokers are bringing an infusion of young blood and nouveau cash to Wall Street. At the PC Financial Network, for example, the typical investor is 42 years old with an income of $75,000, says Killeen. And at ETrade Group Inc. (*www.ETrade.com*), the largest (65,000 accounts) and oldest (four years) online discount trader, the median age is well below 57.

Also online are Charles Schwab & Co. Inc. (*www.schwab.com*) and National Discount Brokers, via Security APL's PAWWS Financial Network (*www.pawws.com*). And the smart money says that by the end of the year, every major stockbroker and dozens of wannabes will be slugging it out on the Web.

The main advantage to trading online is savings. Online discount brokers take $15 to $40 for doing what some traditional traders take hundreds of dollars for. But there are other attractions, too. The Web provides immediate and around-the-clock access to brokerage accounts, as well as countless sites offering investment advice.

And for investors who live dangerously, there is Usenet. There, the hopeful solicit insider information (it's not illegal to ask), and the helpful offer scoops such as which Canadian mining companies have hit pay dirt or tips on how to use indicators like Bollinger Bands to decide when to buy or sell.

The Writing's on the Wall

There's more than one way to promote a Web site.

While in the restroom at the Green Mill, a 1940s-style lounge in Chicago, Mike Miller, online services manager at media production company Vanguard Technology Group (*vtg.org*), noticed another multimedia company's URL—*www.FunkLab.com*—scratched into the wall amid more predictable graffiti.

"It was kind of the same feeling I had when I first saw a URL on a television commercial, a realization that the Web has taken another step into the mainstream," Miller says.

Josh Rosenfeld, the president of FunkLab Inc., denies defacing the wall near the Green Mill's sink, but he says his employees, who "are young and like to have fun," might have tagged the restroom in an inebriated fit of company loyalty and guerrilla marketing.

"If no one is mad, I think it's kind of funny," Rosenfeld says. "If it gets people to our site, great. If it gets us work, then yes, we did it on purpose."

Be All That You Can Be

Of course your Web site is a work of art. Still, it never hurts to step back and objectively assess its effectiveness. Steven M. Dreyer (*smdreyer@ix.netcom.com*), president of SMA Management Systems Inc., uses the following criteria, among others, for evaluating clients' Web sites. (SMA has also developed a tool that allows companies to rate their sites against their competition's.)

Home Page

- Does it draw you in?
- Are the upfront links all necessary or would they be better grouped together?
- Does the top entice you to scroll down the page?

Content

- Does the site have a clear focus and direction?
- Is the mission conveyed upfront?
- Is the copy difficult to read or understand?
- Does it speak to your target audience?
- Is there missing information that your target audience might want?
- Is the material informative?

Graphics

- Are the graphics attractive and clear?
- Do the graphics and icons download quickly enough at low speeds or is there a no-graphics option?
- Do the graphics correspond to the text? Are the icons appropriate to the information conveyed?
- Are the graphics and icons of consistent quality throughout the site?

Navigation

- Is the site easy to navigate from level to level?
- Is the number of levels sufficient to maximize the quality of the visitor's experience?
- Are there any unnecessary levels?
- Does the site need directions or is the way you navigate it obvious?

PHOTO BY FURNALD / GRAY

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It's a Womyn Thing

IT'S HARD ENOUGH to figure out how many people use the Internet (is it 10 million or 40 million?), let alone how many of them are women (is it 20 percent or 40 percent?). But when it comes to the latter question, Angela Kapp, executive director of special markets and technology for Clinique skin-care products, has an answer: too few.

So Kapp is doing something about it, in a big way. At Clinique counters everywhere, the company is distributing a 12-page "Women's Guide to the Internet" packaged with a Netscape browser and three days of free service from ISP Netcom On-line Communications Services Inc. This fall, Clinique is taking its evangelism one step further by offering "Internet 101" workshops at department stores that sell its products.

Those efforts, Kapp hopes, will drive users to Clinique's seven-month-old home page (*www.clinique.com*), which is registering users at a rate of 3,000 to 5,000 a month. The site, which, among other things, allows customers to personalize dynamically built pages with their skin type and colors, does not actually sell Clinique products. Rather than antagonize retailers, the company has chosen to simply steer Web visitors to the nearest Clinique counter.

Kapp's Internet outreach efforts may also benefit the many sites constructed in anticipation of the arrival of large numbers of women on the Web. One of the most impressive is The Hearst Corp.'s HomeArts site (*homearts.com*), an advertising-laden collage of the most Web-friendly pieces of *Redbook*, *Country Living* and *Popular Mechanics*. One of the biggest is Link Technologies' Beautylink, "Your Official Gateway to the World of Beauty on the Web."

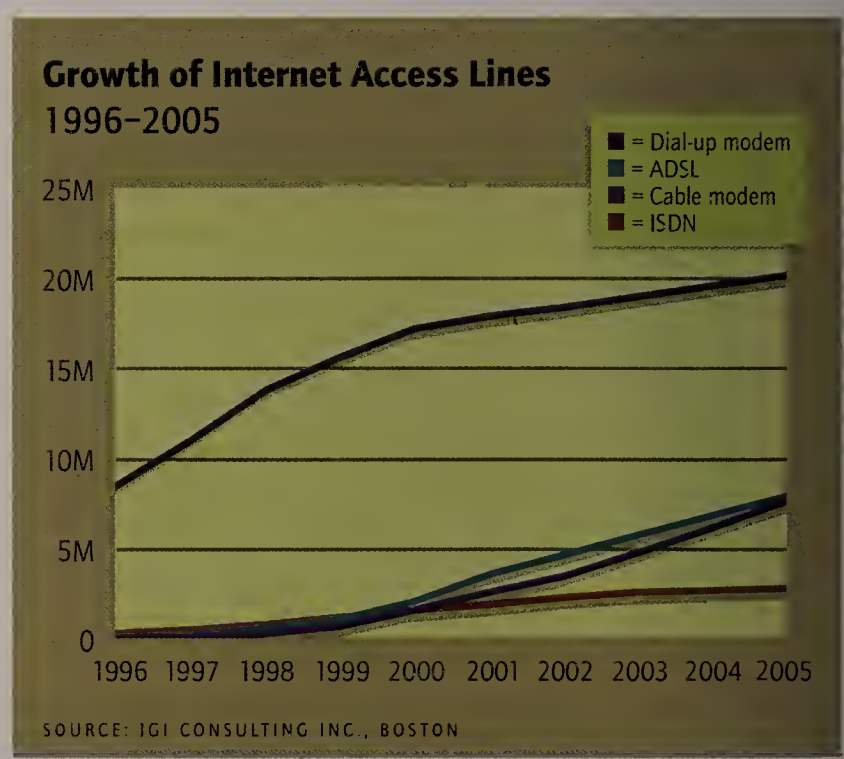
Clinique's efforts may also drive traffic to the growing contingent of gender-specific sites that are more concerned than commercial. For example, at the Just for Ladies page of the Body-Mind QueenDom site (*www.interlinx.qc.ca/~plumeus/*), users can download Cyclic, "the ultimate computerized menstrual calendar and planner" (not available for Macs). There's also Cybergrrl (*www.cybergrrl.com*), where women—or men, for that matter—can order a T-shirt to benefit Rock for Choice, which provides bulletproof vests for abortion clinic workers.

Despite all this activity, not everyone has identified targeting women on the Web as a pressing issue. Last July, the International Quality and Productivity Center abruptly canceled a two-day conference, "How to Market to Women Online," that had been booked at the Sheraton Gateway Suites in Chicago. A spokesman for the company, whose events often draw thousands, said that with two weeks to go, the conference had signed up only three people. WM

ILLUSTRATION BY NINA BERKSON / INFO-GRAPHIC BY TERRI MITCHELL

Easy Does It

Everybody's talking about the amazing promise of high-speed Internet access services such as cable modems and asymmetric digital subscriber lines (ADSL). Yet a new study by IGI Consulting Inc. in Boston claims that traditional dial-up modems will still be used in half of all Internet connections in the year 2005. The reason: Consumers will be put off by the complexity of the new devices. In the battle between speed and simplicity, IGI predicts, simplicity will win.



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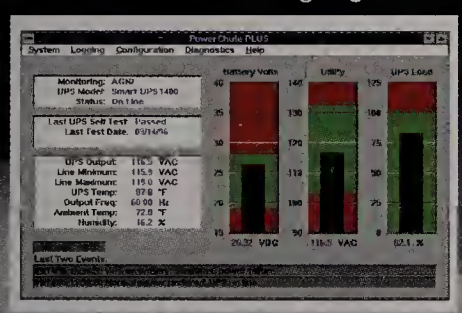

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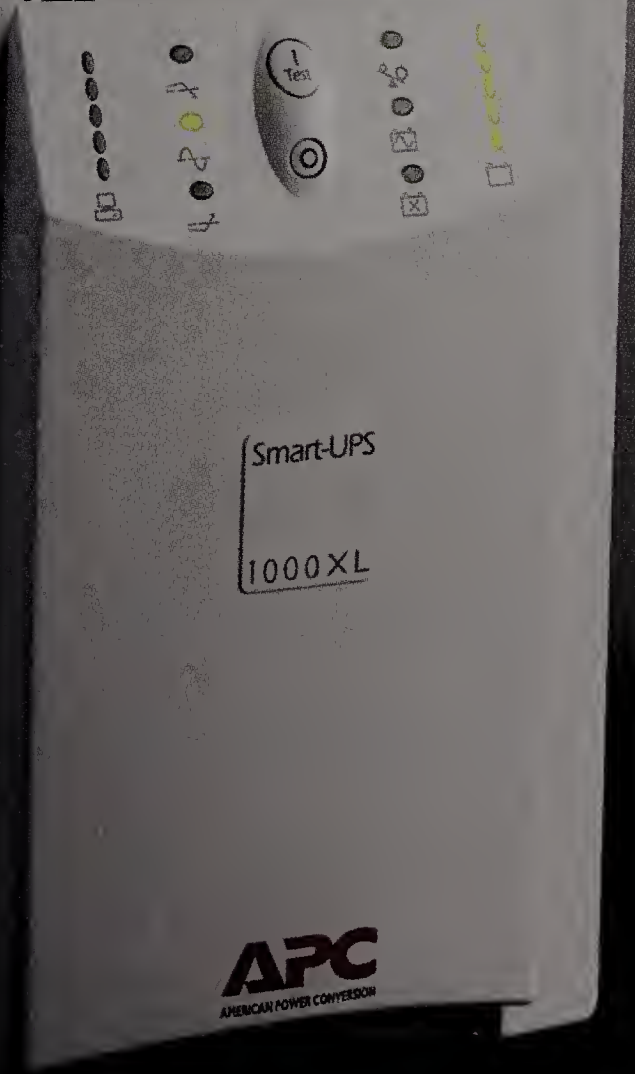

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The Brother and Sister of Invention

TWO SIBLINGS OFFER PRODUCTS FRESH FROM THE DRAWING BOARD

When Robert Keenan was a kid, he loved Legos, especially the Legos that came with little engines. And he envied his father because he could fix the family's lawnmower.

"I was one of those kids who would rip things apart when they got something," Keenan says. "I've always mucked around with electronics and stuff."

His older sister, Judith, was more artistic and the bookworm of the family. "Judith has a passion for dictionaries. That's her idea of what is cool," Robert says.

Between them, they provide the technical wizardry and the business sense to run New and Kewl (*www.new-kewl.com*), a site launched in June to market interesting products, including those the Japanese might call *chindogu*, or almost-useful inventions.

New and Kewl is equal parts gadget catalog and small-business support group, with color photos and descriptions of more than 30 products—sports equipment, computers, health and beauty aids and consumer electronics—ranging in price from $8.95 to $10,000. The list includes items like Grip-it Strips (self-adhesive, slip-resistant strips designed for laptop computers), the Rowbike (part rowing machine, part bicycle), and the Paramotor (a paraglider with a motor).

Although the products are selected for their innovative qualities and entertainment value, Robert says he sometimes has to rein in his love for gadgetry to concentrate on items that offer viable business opportunities and toe the bottom line set by Judith. "At one point, I wanted to populate the site with only the coolest gizmos," he says. "Judith tempers that."

Offering stuff people actually might want is important because the company takes a 5 percent to 50 percent cut of sales made as a result of its marketing efforts. (The Keenans are currently researching order-processing and fulfillment tools in preparation for offering direct online transactions. Meanwhile, visitors can order goods through an 800 number, direct phone, e-mail, regular mail or links to clients' sites.) But sales reflect only one piece of New and Kewl's revenue stream. Vendors also pay for placement, shelling out amounts that vary depending on what they have to offer. For example, clients whose products are, in fact, new and kewl pay very little because they bolster the site's identity. Those whose offerings mesh less well are invited to become advertisers at a higher rate. The company also sells sponsorships for various online and offline events. "We are the first to walk all over the line between advertising and entertainment," says Judith.

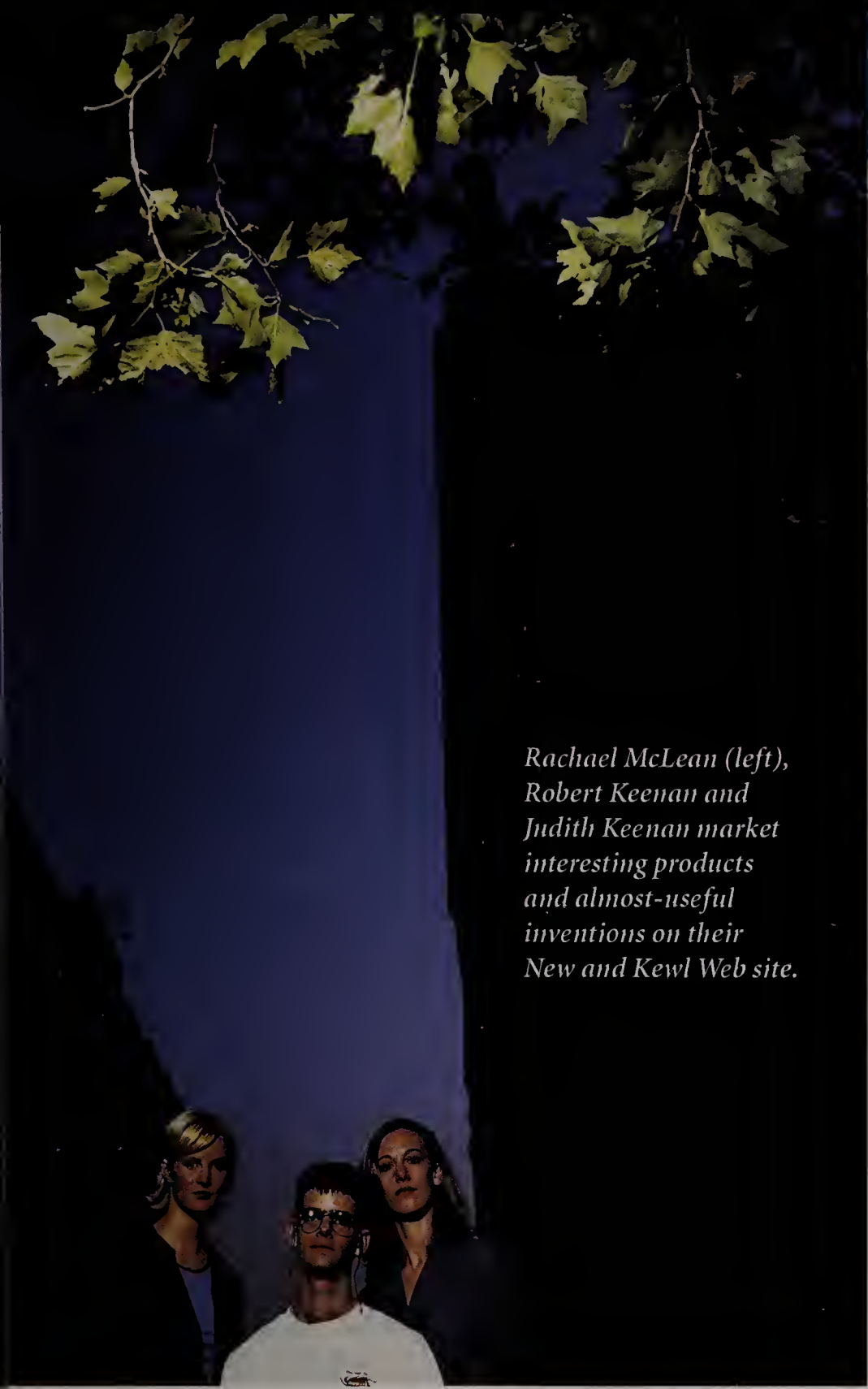
Much of New and Kewl's merchandise comes from single-product companies and large businesses that are looking for brand development, direct sales and business-to-business sales to distributors. But the site also caters to inventors and entrepreneurs, who post information on their patented creations to attract marketers, manufacturers or licensing deals.

All the site's "original programming"—such as a Web noir detective serial called "The Cave," exists to support the marketing, public relations and sale of its core products. "We saw a lot of shopping sites that provided quantity but no end-user entertainment," says Judith. "We also saw a lot of good entertainment sites and online magazines, but many didn't allow end users to act on the information."

New and Kewl is a natural extension of the Keenans' established business ventures. As the founder of a public relations firm that bears her name, Judith spent years representing performing artists, including the avant-garde musician Philip Glass. Robert, meanwhile, was managing his own computer consulting firm in Victoria, British Columbia. When Judith began developing a client roster of multimedia production and Web-based businesses, such as SonicNet Inc. (*www.sonicnet.com*) and Total New York Inc. (*www.totalny.com*), she turned to her brother for information and advice. In January 1995, Robert moved to New York to become Judith Keenan Communications' technical director.

In addition to his love for electronics and computers, Robert brought an idea for something new—and cool—the company could do. "He saw my success with my clients and said, 'Why not bring that experi-

PHOTO BY PATRICK HARBRON



Rachael McLean (left), Robert Keenan and Judith Keenan market interesting products and almost-useful inventions on their New and Kewl Web site.

ence to an independent project of our own making?'" Judith explains.

Because services like New and Kewl already existed in magazines such as *Popular Science*, *Popular Mechanics*, *Discover* and *Wired*, Robert believed it was only a matter of time before they hit the Web.

As a "client" of Judith Keenan Communications Inc., New and Kewl Intertainment Corp. draws on the parent company's resources. Keenan Communications' six staff members work on it directly or indirectly; HTML coding and production are done mostly in-house (by a third founder, Rachael McLean), and the site runs on a Pentium 120 and a Dell workstation connected via LAN to a T1 line. "From an IS point of view, I'm trying to simplify my life," Robert says. "We don't have a million-dollar budget, and we don't need one."

www.new-kewl.com

The Keenans also have leveraged relationships with the PR firm's other clients to add ideas and resources to the New and Kewl mix. Those partnerships mean New and Kewl requires very little capital, Judith says. (The site, financed by the Keenans and private investors, is already making money, although no one's saying how much.) For example, the folks at Web magazine "Motorcycle Online" (*www.motorcycle.com*) alert the Keenans to vehicles and transportation-related gadgets that might merit inclusion on their site. And online design company Fusebox Inc. (*www.fusebox.com*) helped out in June when New and Kewl underwent an extensive redesign in preparation for its official launch. (An earlier version of the site had opened to a limited audience the previous February.)

The redesign and launch coincided with the inaugural "New and Kewl Expo: The Web Gets Real," a live event in New York showcasing some of the company's merchandise. Sponsored by Zoe Olive Oil, food wholesaler Gourmet Garage and the East Village cybercafé @Cafe, the expo attracted about 400 people, including members of the American Marketing Association, the Promotional Marketing Association of America and the New York New Media Association. New and Kewl products are also on display for sale over the counter at @Cafe. "This is a Web site driving the creation of a retail outlet," Judith says.

The site's current popularity is difficult to gauge because the Keenans didn't start collecting substantial hit counts and user data until last summer, when they signed up for NetCount's third-party auditing service. But they do know that many of the site's visitors come from media companies. There's also a fair amount of international traffic: Patrons of the site's Name a Star program, which lets visitors register a star in the name of a friend or family member, have come from the United States, Russia, Italy, Britain and Portugal. That kind of reach is exactly what the Keenans had in mind, says Judith. "I would like New and Kewl to become the Associated Press wire for the product world." WM

Staff Writer Heath Row can be reached via e-mail at hrow@cio.com.

In Memoriam

A PIONEERING WEB MARKETING LIST RIDES OFF INTO THE SUNSET

BY JIM STERNE

There was no specific date that the West suddenly became safe for families in covered wagons. There was no specific moment when the trappers and traders handed over the reins to the settlers and the homesteaders. But June 8, 1996, was the date that something like that happened on the Internet.

The era of initial exploration and discovery was over. The Internet Marketing Discussion List, moderated by Glenn Fleishman of Point of Presence Co. (*www.popco.com*), was gone. The list had served for two years as the recognized gathering place for Web marketing cognoscenti. Its participants invented an industry and laid the foundation of an ideology.

The Internet Marketing Discussion List was created from the rib of the High Tech Marketing Communicators List, moderated by Kim Bayne of WolfBayne Communications. Designed for marketers of high-tech products and services, HTMarcom had been online for almost a year when the Web happened. Initially, Kim had set out to cover a wide variety of topics, such as managing technology product giveaways, getting the most out of trade shows and using a technical support organization to gather intelligence. There was also the usual banter about which lists were best to rent and which outsourcers did quality work.

In the spring of 1994, the discourse turned exclusively to creating Web sites. For most of us, it was great, fascinating, astonishing. But when the talk began dwelling on servers, HTML and cgi.bin scripts, Kim just said no. In early July of that year, she decided she had had enough. She readily acknowledged that conversation about Internet marketing was vital. But please, she asked, could we take it somewhere else?

Within two weeks, Glenn offered up a new list, and for the next two years he miraculously kept up with the snowballing pace of change. He read—and approved—every post, saving me from public embarrassment on numerous occasions by rejecting some of my more belligerent, thoughtless or just plain poorly crafted messages. In the process of reading all those messages, Glenn may have learned more about the subject than practically anyone else on the planet.

A look at the Jan. 1, 1995, roster of Glenn's list reveals a Who's Who of Internet marketing. There were those interested in measuring the Internet: Sunil Gupta of the University of Michigan's Hermes program; John S. Quarterman from Matrix Information and Directory Services Inc.; and Ariel Poler, founder and president of the Internet Profiles Corp. There were those who wrote books on the subject: Jill Ellsworth, Adam Engst, Mary Morris, Chuck Pettis and Dave Taylor. There were those who built Web sites for others: Joe Andrieu, now chairman of the Internet Developers Association; Clifford R. Kurtzman, CEO of The Tenagra Corp.; and Ivan Pope, co-founder of Webmedia. And there were many, many others.

We took on big issues, like spamming, in heated discussions with Sanford Wallace, owner of Promo Enterprises, and Jeff Slaton, the self-proclaimed Spam King. We wrestled with whether the Internet as we knew it would be annihilated by the broadcast mentality of advertising agencies. We sought ways to protect and copyright our work. We chewed over how to manage Web sites and the people for whom we were building them. We taught each other the importance of copy clarity, small graphics and added value, and the need to avoid the dreaded "blink" command.

That list was where we cut our Internet marketing teeth.

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We grew up together there. It was the hometown from which we all came.

Denial, Anger, Bargaining, Depression, Acceptance

THE LIST'S passing was announced on June 8: It was simply taking up too much time and too many resources, Glenn said. All 7,000 or so of us who had read, learned and spouted off on Inet-Marketing were shocked. We felt a disturbance in The Force. We didn't want it to be true.

Some people turned downright hostile and sent Glenn e-mail arguing that it was his public duty to continue. Dozens of messages offered to help out or defray costs or post less or be nicer to our fellow man and more ecologically responsible if only Glenn would say he was kidding.

There were also some private e-mails expressing the contrarian viewpoint that the passing of Inet-Marketing might actually be a relief. Certainly there was a degree of pressure to receiving 20 or 30 messages a day, all vetted by Glenn and therefore automatically worthy of our attention.

Then again, perhaps it was the right time for this particular forum to go. We, the original subscribers, are all a little more grown-up now. Our university days are behind us, and our desire for camaraderie and open debate has been replaced by the need to meet deadlines and hire additional staff. More important, we have lost interest in retilling the same soil. The conversation had become cyclical. In his farewell post, Glenn wrote:

"Frankly, I believe even with the continued and active participation of a good fraction of its membership that the level of discussion on the list has become less and less interesting over time, and we're repeating ourselves ad nauseum for the most part. As moderator, I can't point to anyone but myself as the contributor or cause of this decline; that decline directly correlates to my decreasing [level of] interest and time to invest in the list...."

The "A" List

The Internet Marketing Discussion List was too good to disappear into a void. In fact, it leaves so many offspring that the only way to keep track is with Kim Bayne's Marketing Lists on the Internet (*www. bayne.com/ wolfBayne/htmarcom/mktglist. htm*). Below are my top picks from the field:

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Body: Subscribe IMARCOM Name, Affiliation

ONLINE ADVERTISING DISCUSSION LIST
www.tenagra.com/online-ads

THE INTERNET MARKETING ROUNDTABLE
To: *mktg-roundtable@wmo.com*
Body: Subscribe

INTERNET DEVELOPERS ASSOCIATION MEMBERS-ONLY DISCUSSION MAILING LIST
www.association.org

In addition, Internet Marketing Discussion List archives can be found at *www.i-m.com.*

The History Of The World (*Condensed*)

JUST AS Ferdinand Magellan proved the world was round, Vinton Cerf and the Grand Old Men of the ARPAnet proved that a network of computers could cover the earth. In true Christopher Columbus style, Tim Berners-Lee discovered a whole new World (Wide Web) while trying to link CERN physics lab papers together. The NCSA Software Development Group brought boatloads of pilgrims to the shores of the Web with the promise of Mosaic. Then it was up to the frontiersmen and the trailblazers to open the West and make it safe for pioneers. That's where Glenn Fleishman came in.

The Trailblazers Make Way for Tillers of the Soil

THE TRAILBLAZERS worked their way slowly through Web territories, discovering glorious new vistas and mapping out the terrain. They crossed mountains and forded streams. They ran afoul of natives intent on keeping commerce off their land. And at the end of the day, they all got together at Glenn's saloon to wash down the trail dust with a congenial glass of virtual whiskey and to trade information about what lay ahead.

These subscribers took on the roles of explorer, guide and even sheriff. Tom Vassos wrote the occasional Trip Diamonds report to keep the deskbound apprised of the goings-on in the conference territories. Rob Raisch's Postage-Due Marketing (*www. internet.com:2010/marketing/postage. html*)—which was born out of intelligent debate on the Inet-Marketing list—still stands as a seminal treatise on unsolicited e-mail.

And now the trailblazers are moving on. We know that content is more important than appearance. We've discussed the difficulties of building pages to accommodate multiple browsers. We're off to grapple with new problems—problems that come with creating new businesses and new business models.

So we offer a tip of the hat to Glenn Fleishman and all those who participated on the Internet Marketing Discussion List. Now that the Gold Rush is on and the Golden Spike has been driven, his becomes just another historical marker on the side of the road. We thank him and wish him the best of everything. WM

Jim Sterne (jsterne@targeting.com), *president of Target Marketing of Santa Barbara, is an Internet marketing strategy consultant and the author of* World Wide Web Marketing: Integrating the Internet Into Your Marketing Strategy.

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Taxation Without Organization

IF YOU THINK THE TECHNOLOGY OF THE INTERNET HAS A LONG WAY TO GO, TAKE A LOOK AT THE TAX STRUCTURE **BY G. KENT JOHNSON JR.**

Taxes and death are said to be life's only certainties. But lately, companies trying to calculate their taxes on transactions made through electronic commerce are finding only uncertainty.

As state and local governments scramble for revenues, the rapidly expanding online industry is an increasingly attractive target for taxation. Such taxes, differing from state to state and from city to city, are resulting in a high-tech hodgepodge of conflicting, confusing and convoluted regulations. And rather than pass new legislation, states often rely on laws enacted long before the Internet and online services came into being.

Last fall, for example, the State of Texas notified network access providers that they were subject to the state's telecommunications services excise tax at a rate of 1.4 percent of gross receipts. That sounded clear enough, but left unanswered were two questions: Exactly what constitutes a network access provider? And does the tax apply when the service provider is located out of state? Nearly a year later, both issues remain unresolved.

At most companies, the majority of tax resources is devoted to federal tax compliance and planning. However, KPMG Peat Marwick LLP estimates that 70 percent of the average company's tax bill consists of state and local taxes. Excise taxes on sales and use of telecommunications or data processing represent approximately 35 percent of the total tax bill. Furthermore, the paperwork associated with the imposition of additional taxes results in tremendous administrative costs. To be certain what taxes apply to their companies, executives should consider these five factors:

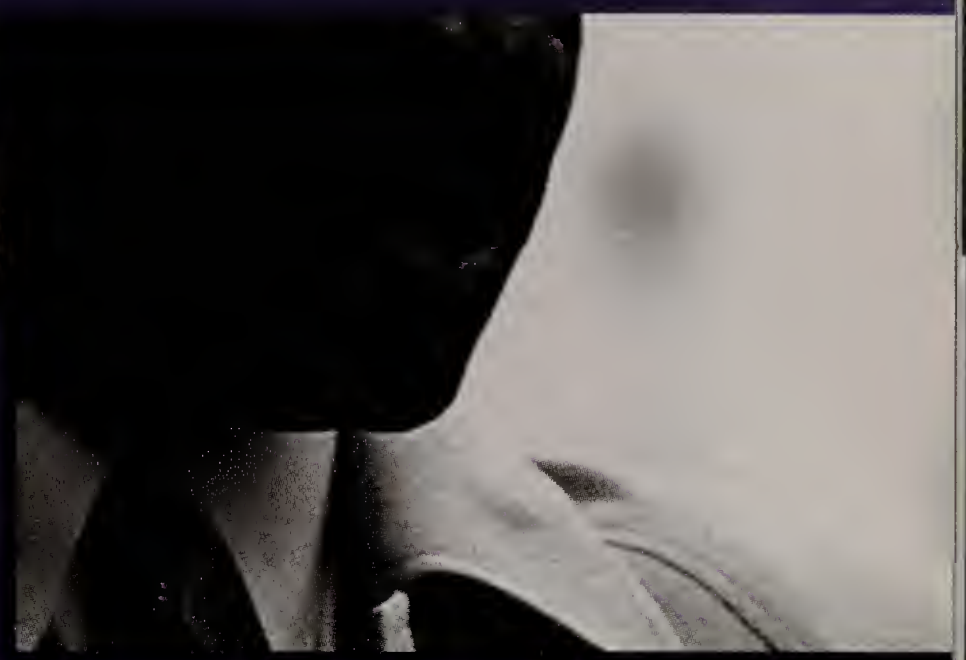
- TAX JURISDICTION: *What state or locality has the legal and constitutional right to levy this new tax?*
- TAX BASE: *Which products and services are taxable and which are exempt?*
- COLLECTION: *Which sellers have an obligation to collect the new tax from their customers?*
- SOURCE: *Where does the revenue originate? Where is the transaction subject to tax?*
- RATE: *What is the tax rate?*

Sounds simple, but of course it's not—particularly when it comes to the online industry. In fact, in a recent KPMG Peat Marwick survey of almost 400 chief financial officers and tax directors of 300 U.S.-based companies, 93 percent said that state and local governments must clarify the taxation of electronic commerce if it is to reach its full potential. And more than half said that ambiguity regarding state and local sales and transactions taxes is inhibiting Internet commerce. (The survey, "Electronic Commerce: Taxation Without Clarification," is available at *www.us.kpmg/salt/story1.html.*)

Many states claim that current telecommunications taxes apply as well to online services. For example, the State of Washington is enforcing its network telephone services tax on Internet access providers. According to the state's tax code, a tax is imposed if the signal originates or terminates in the state and is billed to a service address in the state.

ILLUSTRATION BY MARK STEELE

New Backstage™ Studio



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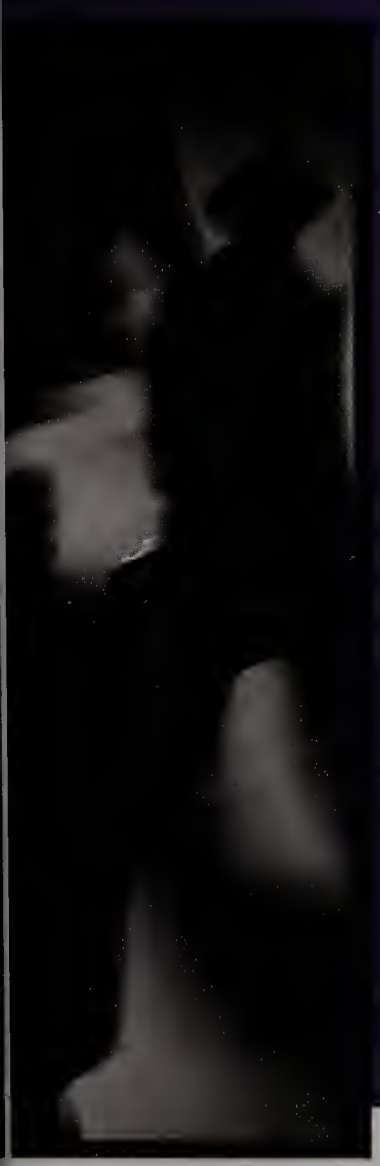

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That's simple enough in a circuit-switched environment, where the taxable parties are easily identifiable, but what happens with packet-switched services? What if a company purchases Internet access from an out-of-state provider in order to download files from a remote office and then connects to the provider's point of presence via a leased line? Does the signal originate or terminate within the state?

The wide variety of services offered via the Internet further complicate tax issues. For example, Connecticut has imposed a 6 percent sales tax on computer and data processing services. The state has decided that the 1975 law applies to online data services as well. However, Connecticut exempts online advertising. As a result, the creation and placement of Internet advertising is considered a nontaxable activity, but charges associated with Internet advertising, such as scanning materials, may still be taxable as computer and data processing services. In Texas, on the other hand, maintaining a company Web page is regarded as a taxable data processing service rather than as a nontaxable advertising service.

Some states tax merchandise delivered by mail but do not tax goods and services delivered online.

Furthermore, Web searches can be considered database services, and e-mail can be considered a paging and messaging service. Many state and local governments already impose excise taxes on those services.

Florida, which depends heavily on sales tax revenues, has taken an aggressive position. Last year, the state attempted to impose a 2.5 percent tax on the gross receipts of online service providers and a 7 percent tax on Internet users. In response to an outcry from the online industry, the Florida legislature passed a statute to prevent the Department of Revenue from collecting sales taxes on Internet access, e-mail and other computer services until July 1, 1997. The governor, however, vetoed the legislation and directed the department only to hold off taxing Internet access services until Feb. 1, 1997. The state recently authorized the formation of a commission to study the issue.

Yet another online service raising questions is retail. Like catalog transactions, online retail can be considered the sale or use of goods and therefore subject to sales tax. But not all states treat it that way, and the results are sometimes problematic. For example, California, Massachusetts, South Carolina and Virginia tax merchandise delivered by mail but not goods or services delivered online, because they are not considered "tangible." Therefore, someone who purchases software by downloading it would be exempt from sales tax. However, if the same software were delivered on disk, it would be subject to sales tax. Such a variance could represent an unfair advantage to online software providers.

As any taxing authority knows, paying taxes is one thing; collecting them is another. Who is required to collect taxes on the sale of merchandise over the Internet? In pre-Internet days, an out-of-state company selling tangible personal property was generally protected from collecting sales or use taxes if it had no property, employees or agents in the state. Such companies were considered to have no taxable presence or "nexus." However, if a state were to declare that a local Internet access provider is an agent of an out-of-state seller, then it could argue that the seller does have nexus. Furthermore, the state could argue that hanging a home page on an in-state access provider's site is the same as having property in the state. Still another question: Who bears the legal incidence of sales tax? Sometimes it's the service provider; sometimes it's the user. And often it's both.

Connecticut requires the provider to collect the tax. But if it fails to collect, both the provider and the customer can be liable. Even in states where the sales tax is assessed on the purchaser, sellers of Internet services could be held liable for uncollected taxes.

Undoubtedly, the process of remitting sales taxes will change dramatically in the near future as electronic commerce becomes more popular. Some experts speculate that taxes will be remitted directly to the state at the close of each electronic transaction. That should ease fears among CFOs in our survey who identified record-keeping and their companies' ability to comply with tax provisions as their biggest concerns.

In the meantime, companies should keep good records and stay abreast of local efforts to levy and collect taxes on electronic commerce. Businesses and associations are working closely with state and local legislatures to shape the tax laws of the future and in some instances have even defeated attempts to tax Internet commerce. Last year, for example, the city of Spokane, Wash., levied a 6 percent tax on Internet service providers. But a council member organized a grassroots opposition effort, and the city has delayed imposition indefinitely.

These questions continue to evolve as this article goes to press. But even as some questions are answered, others are popping up. It's safe to say that, thanks to the Internet and online commerce, there is now only one certainty in life, and it's not taxes. WM

G. Kent Johnson Jr. (kjohnson@kpmg.com) *is the national partner-in-charge for the sales and transactions tax practice at KPMG Peat Marwick LLP.*

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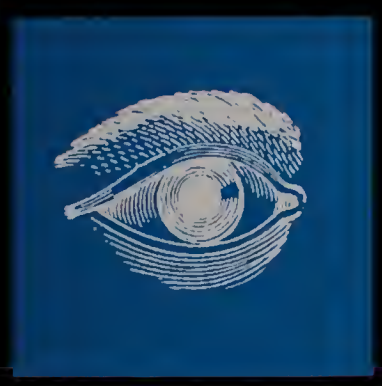

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Only

Businesses are discovering the benefits of giving intranet access to a few select outsiders

BY ANNE STUART

Life on the World Wide Web used to seem so simple.

FIRST, a forward-thinking company established a Web site to project its carefully crafted corporate visage. Next, companies figured out that this same new technology could work wonders in-house as well, so they put up internal Web sites to reflect their organizations' private faces. They were different, these two kinds of Web sites, divided by distinct lines. Public, private. Outside, inside. Internet, intranet.

These days, external Web sites remain public, but internal sites at a growing number of organizations are becoming something less than private. Increasingly, companies allow selected outsiders—partners, vendors, distributors, contractors, customers and others—to slip through the barbed wire of the firewall to share at least a corner of their corporate estates.

In so doing, they've created a third, more amphibious, slice of cyberspace: the expanded, or extended, intranet.

Expanded intranets aren't private LANs or WANs or electronic bulletin board systems, although networking and BBS-style conferences are certainly among the applications they enable. They're not EDI,

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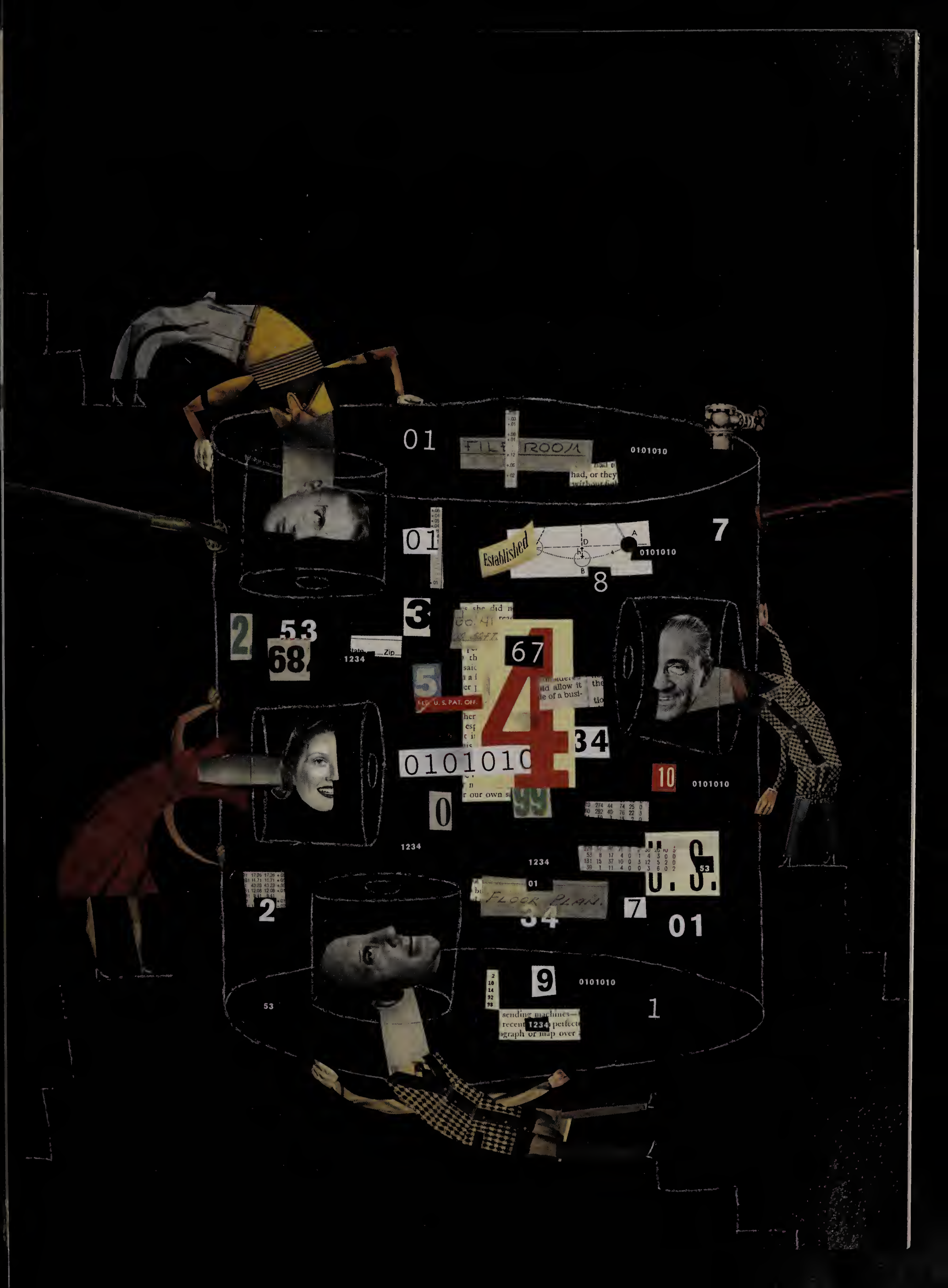
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although many insiders believe they are paving the way for widespread electronic commerce. And they're not the virtual private networks that have been in the news recently, either (see related story, Page 31).

Instead, expanded intranets permit access to a piece of a company's systems behind its firewall, where registered third parties can access specific applications on specific servers. Forrester Research Inc., which recently issued a report on the subject, has dubbed this region the "DMZ," or demilitarized zone. To enter the DMZ, designated parties typically must be approved and manually registered by someone inside the company. They then receive a password as well as software tools that let them navigate through, and participate in, the carefully cordoned-off community.

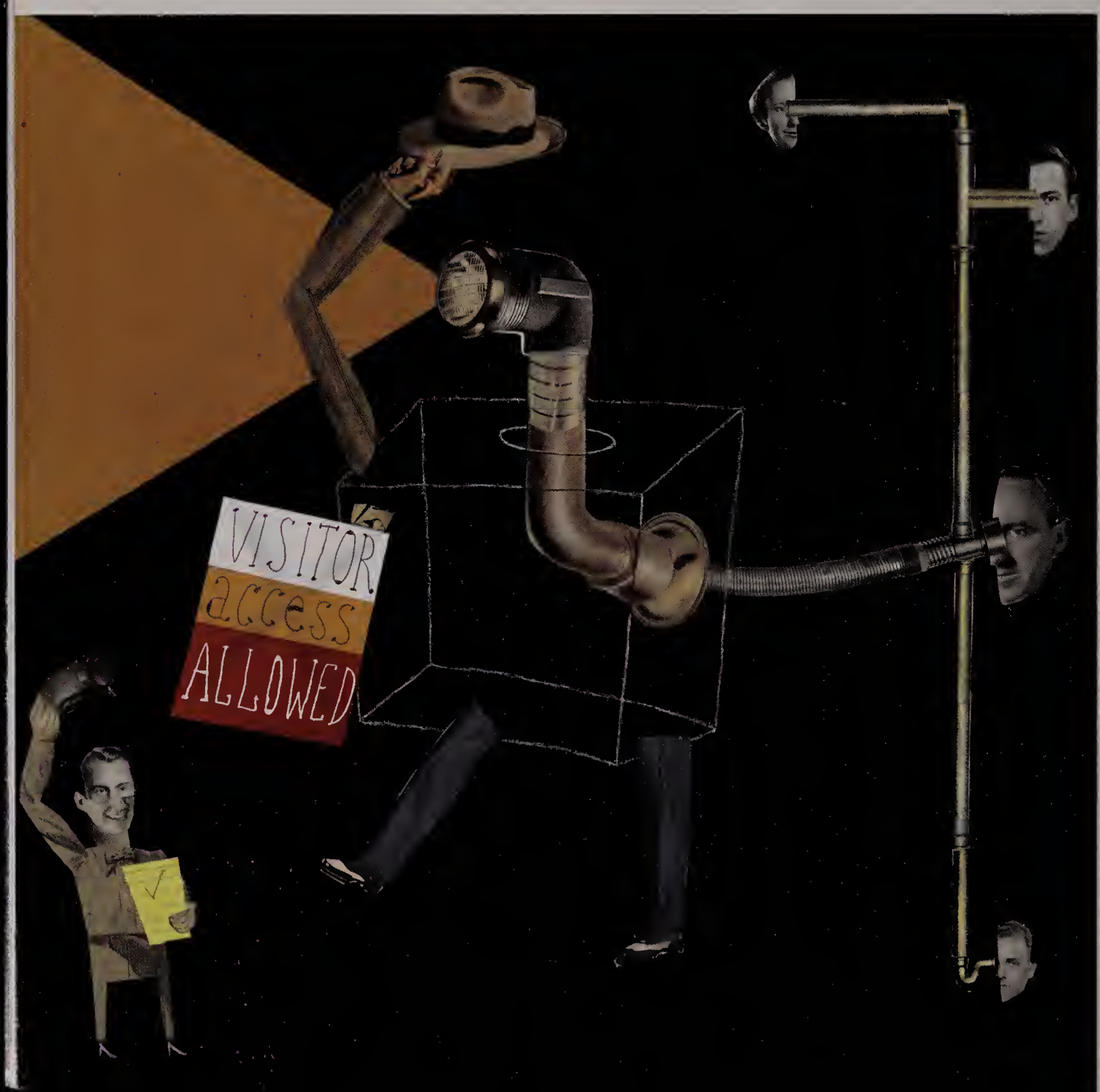
But expanded intranets also provide broader access to additional information, typically restricted or customized materials such as the up-to-date sales and order data that Hewlett-Packard Co.'s channel partners can compile about their own accounts. And increasingly, expanded intranets will let partners work together in ways they couldn't on the public Web. Some companies even use intranets like groupware to collaborate with outsiders on the inside. One railroad company, for example, allows contractors and partners full intranet access for cooperative design and development.

USE OF EXPANDED INTRANETS is expected to grow dramatically in the next 18 months. In a Forrester survey of 35 Fortune 500 companies with intranets, 46 percent of the respondents said they currently give access to selected outsiders, and 28 percent said they plan to do so.

Given the universal concern over network security, those results are shocking, says Blane Erwin, the senior analyst with Forrester's Network Strategy Service who edited "Partners on the Intranet." While the public Internet culture celebrates the principle of widespread accessibility, most companies worry that too many visitors could increase the possibility of electronic vandalism or theft.

Recently, however, many businesses have come to believe that potential payoffs outweigh the potential problems. The main benefit of an expanded intranet, of course, is convenience, but intranets can also help strengthen relationships with partners or prospects. A few companies consider the nurturing of those relationships so critical that they've placed a higher priority on expanding their intranets than on establishing a public presence on the Web.

That's the case at Financial Service Corp., which distributes financial products and services. Although FSC isn't entirely convinced that it needs an external site, it has already opened its corporate intranet to about 1,400 independent field associates and some



200 preferred business partners at about 60 companies in 48 states and Puerto Rico.

"We had been looking at whether we could enhance how that community communicates," says Susan Wood, marketing manager for Business Edge, FSC's value-added services unit. "We saw the Web as a great way to accomplish what we needed."

FSC opened its virtual doors for two reasons: to provide timely, relevant business information as quickly as possible and to enable the field associates—independent financial advisers and planners nationwide—to network with one another.

FSC's expanded intranet features a "field networking" database, where associates can find others with similar expertise, as well as "conference rooms"—FSC's preferred, more businesslike term for chat areas—where they can talk privately in real-time.

That's important because many of FSC's field associates work solo, often in isolated areas. So a field associate who is the only person in her small Midwestern community specializing in retirees can network with other specialists doing the same kind of work elsewhere. "They have the ability to find somebody else who does what they do on a daily basis and to talk about it," Wood says.

Those conference rooms have an unexpected advantage over face-to-face or phone conversations, Wood says. Instead of taking notes, the parties can just print out transcripts of their online conversation and highlight the important parts.

Why not just let the associates and partners network on an external Web site, where others might become aware of FSC as well? While FSC's intranet material isn't confidential or sensitive—"it's really just business information," Wood says—FSC officials wouldn't necessarily want it circulating in public. And knowing that their conversation is confined to a smaller universe, users can talk more candidly about their concerns.

Many other companies extend their intranets not only to business partners but to customers as well. Formtek Inc., a software developer owned by Lockheed Martin Corp., lets a few customers use its intranet to demonstrate to their own prospects how they use Formtek's products. "You can demo live on a real system, which you can't do on a public site," says senior research scientist Bill Korbholz.

TO PROVIDE real value, companies try to offer intranet visitors meaningful, tailored information. "We have a concept in our company we call 'virtual distribution,'" says Robert Rodin, CEO and president of Marshall Industries Inc., a distributor of industrial electronics, which has opened its intranet to suppliers and customers. "The people we service should have access to product information and service any time they want it, any way they want it, from any place they are."

Private Property

Some refer to it as a virtual private Internet. Some describe it as a virtual private network (VPN). Some just call it tunneling.

They're usually talking about the same thing: a network connecting organizations, or far-flung divisions of one company, through the Internet rather than over an expensive private infrastructure. If a company in New York wants to link its LAN to a partner in San Francisco (or Paris or Sydney or Tokyo), the partners don't necessarily need to split the hefty bill for a private leased line. Instead, they can exchange confidential data over the Internet, using an encrypted "tunnel" between their firewalls. "The technology is such that you can encrypt and route your private networking traffic over the public Internet," says Russ Jones, director of the Internet Business Group's program office at Digital Equipment Corp.

VPNs are typically more private than expanded internal Web sites: Companies often admit just one or two outside organizations rather than the hundreds, even thousands, that gain access through expanded intranets. They're also typically more secure. For instance, Digital's AltaVista Tunnel and TradeWave Corp.'s TradeVPI 2.0 require authentication from both client and server before either party can move data. And they're relatively cheap. Jones, whose company's AltaVista line includes a number of products with tunneling features, cites the case of an electronics company's branch office in Hawaii that cut the cost of linking to a mainland office from $3,000 a month to $1,000 a month by switching from a dedicated 56KBps leased line to an encrypted Internet tunnel over a T1 line.

Digital engineers use the technology themselves for bicoastal collaboration on a new product. Hardware work resides on a Digital LAN in Nashua, N.H., and software work lives on a LAN at Adobe Inc. in Mountain View, Calif. Linking them is an encrypted tunnel that crosses the country, penetrating four firewalls. While the company saves money, Jones cites another competitive advantage: letting "both groups of engineers collaborate like they're one engineering team."

Companies can also set up PC-to-LAN tunnels to replace dial-in modem pools for small businesses and single remote users, such as telecommuters or frequent travelers.

–A. Stuart

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The following companies market products designed to help businesses expand their intranets to outsiders:

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Community Builder 2.0, Amicus Networks' suite of tools, includes online communications technology, a security system for restricting access to certain areas, a database management program and a publishing tool.

BELLCORE (BELL COMMUNICATIONS RESEARCH INC.)
Bellcore's solutions include SysGuard, a set of tools for administering secure systems in distributed environments; S/Key, a one-time password authentication system; and Adapt/X Harness, which lets companies move information onto Web sites without converting it into HTML.

GALACTICOMM INC.
Galacticomm's Worldgroup 2.0 client/server application suite includes, among other features, a file library and teleconferencing capability. Plug-in modules include Omni-Mall, a client/server catalog sales environment, and Fax/Online, an integrated fax database solution.

ONEWAVE INC.
OneWave, formerly known as Business@Web, manufactures OpenScape Enterprise, which was designed to allow secure, high-volume Web transactions using standard Internet protocols, component-based, object-oriented technology and a scalable multitier architecture. An add-on module enables integration with legacy systems.

OPEN MARKET INC.
OM-Axcess was designed to provide a "corporate Web environment" for select and personalized information. The software allows organizations to provide different content for different audiences on the same servers. It can also authorize users, report on individual information requests, identify security breaches and integrate with existing applications.

TEXAS INSTRUMENTS SOFTWARE
Texas Instruments Software manufactures WebCenter, which combines the application development environment of Composer, TI's line of component-based development tools, with the Web.

To provide that access, Marshall created PartnerNet, which lets suppliers and customers get at self-customized information through the company's intranet. For example, Marshall's high-tech suppliers can obtain sensitive information about their own accounts, such as sales reports, inventory levels and design data; they can also accept or reject price quotes and order training materials. PartnerNet automatically notifies registered users by e-mail when they have new information waiting.

But PartnerNet doesn't provide equal access to all. A sales representative for Marshall supplier Texas Instruments Inc. can retrieve only information about his or her current assignments. A Boston-based TI manager can review sales activity in and around that city but not for Miami or Detroit. TI's Northeast regional manager can obtain the same information about the six New England states and New York but not for the West Coast.

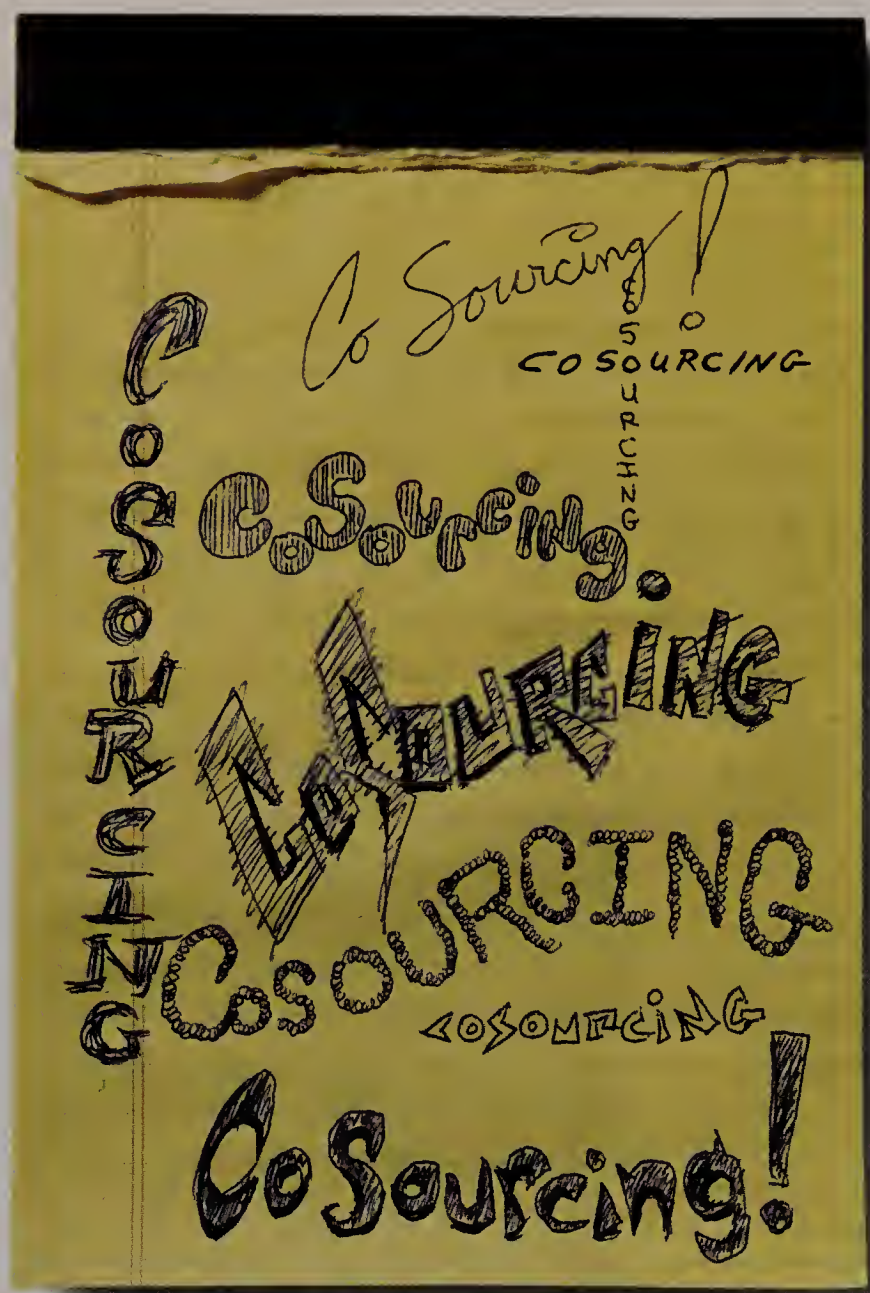
Hewlett-Packard, similarly, wants its 12,000 channel partners to have access to any information about their own orders and credit status as well as to product information, productivity tools and announcements. But "we don't want one channel partner to look at another channel partner's order," says Sam Ellis, worldwide manager of HP's channel partner technology program. "And we don't want them elsewhere in HP's MIS systems."

A YEAR AGO, just the perception of security threats from hackers, viruses or competitive espionage would have made all this openness unthinkable. Now, though, some experts say those concerns have largely been resolved and, in any case, companies clear all outsiders seeking admittance to their intranets and monitor their movements on the site.

"It's pretty restricted," says Tom Anderson, director of corporate communications for Millipore Corp., a manufacturer of industrial purification technology that opens its intranet to one major vendor so that it can browse a catalog and other information on a Lotus Notes database. The company may extend the privilege to others as well, but, says Anderson, "they have to be vetted and long-term partners, not just project people."

At this early stage of the intranet game, maintaining that delicate balance of openness and security can add up to one big IS headache. Because Web users have yet to agree on a single encryption standard, most companies piece together a combination of firewall, encryption and authentication technologies, which both client and server must use. Currently, IS staffers must manually register all preapproved visitors, typing in their names on every server they need to touch. That cumbersome procedure can result in bottlenecks as partners wait for clearance to access the demilitarized zone.

Companies truly interested in improving access must



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accept that they simply can't cover every security-related eventuality. "Dealing with the Internet, you accept some risk," says Rodin.

As a precaution, many companies simply keep the most confidential information off servers connected to the Web. Rodin says he would relay extremely sensitive or proprietary data in a more traditional way—such as face-to-face meetings or personal telephone calls—rather than put it online.

Still, it's already getting easier to manage expanded intranets. An emerging class of "behind the firewall" products has helped enable the creation of DMZs (see box, Page 34). These products allow outsiders to enter a carefully delineated area on the intranet only after somebody in the company has cleared them for admittance. "It's like showing up at the desk at the front lobby and getting a visitor's badge," says Forrester Research's Erwin. "You don't allow me to try every door in the company, but there is an area behind the lobby where we both agree I can go."

In addition, instant authentication, standardized secure pipes and other technologies should emerge in the next couple of years. Companies will be able to use those tools to create what Forrester calls "the distributed partner zone," a more dynamic, fluid shared intranet.

MEANWHILE, proponents say security risks remain an acceptable trade-off, considering that expanded intranets not only improve business relationships but also save a bundle in employee time and supplies. "Every time you call a customer-service person, it costs [the company] $100 just to say 'hello,'" says Clay Ryder, senior industry analyst with Zona Research Inc.

But on expanded intranets, customers can log in, answer their own questions, place orders and even pay electronically—on their own schedules, from anywhere in the world and at little cost to the company. Visa International, for example, estimates that it will save 2 million pieces of paper per day by letting its 19,000 member banks into its intranet, where they can check their own transactions and get up-to-date details on fraud alerts, marketing campaigns and the like.

Cisco Systems Inc. offers another excellent case study. The supplier of enterprise networks wanted to make a variety of product, technical and service information available to its 50,000 business customers. But the company didn't want to put the data on an insecure external Web server and at the same time didn't want to bury it so deep inside that only employees could retrieve it.

Cisco's solution was to establish an integrated Internet-intranet system that lets customers navigate through internal databases to configure and order products, check pricing, retrieve technical support data and register for user seminars. Registered outside users do business on a server outside the firewall, with a custom-developed encryption mechanism for penetrating the internal firewall to gain access to their private information.

The system has eliminated at least 250,000 incoming customer phone calls per month, and the company estimates it saves more than $50 million annually by providing information online rather than via telephone and fax, says CIO Peter Solvik. Cisco expects to conduct 20 percent of its ordering through its integrated system within a year, further reducing paper purchase orders.

As the use of expanded intranets grows, many companies expect to spread the task of managing the sites not only across the organization but also into the user community. Using Amicus Networks' Tool Belt publishing tool, part of the Community Builder application suite with which FSC built its site, FSC's partners soon will be able to make changes to their own material on the FSC site, and without learning HTML, Wood says. And that, no doubt, is just one of a great many innovations that will make expanded intranets more valuable and more popular.

"We have built it, and people will come," says HP's Ellis. "People are attracted to business partners with whom it's easy to do business. If you create difficulties for people, they will just go elsewhere." WM

Senior Editor Anne Stuart can be reached via e-mail at astuart@cio.com.

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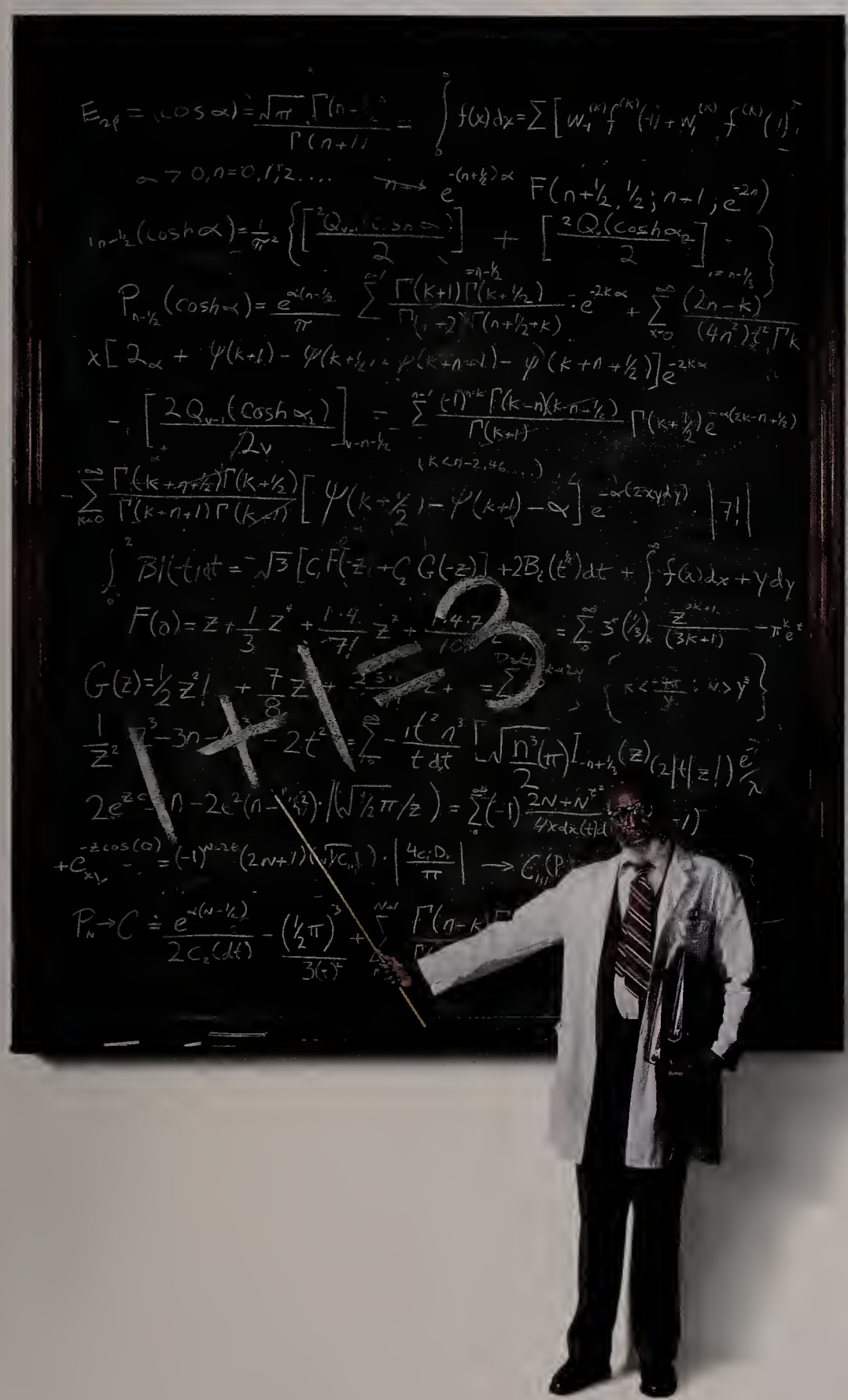

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The Ultimate Webmaster

Tim Berners-Lee, the man who gave away the Web, talks about how it is changing business

By Scott Kirsner

THE FIRST BIG thunderstorm of the summer is rattling the windowpanes of MIT's 545 Technology Square, and the man who invented the World Wide Web is chastising me in a clipped British accent for not having read his FAQ.

"Have you looked at my Frequently Asked Questions?" asks Oxford-educated Tim Berners-Lee, implying that one of those questions bears a distinct resemblance to my own first query. "You'd get a lot of points with me as a journalist if you'd actually looked at them first."

I stammer out an excuse: I've grown inured to FAQs; they rarely offer any real answers to my questions. But in Berners-Lee's promising view of the Web's potential, there's an answer to every journalist's question out there, coded and cross-linked in HTML. So in addition to making the Internet a place for sharing all kinds of information, the Web should render this kind of interview superfluous. And that would be fine with Berners-Lee. The director of the World Wide Web Consortium (W3C) and a principal research scientist at MIT's Laboratory for Computer Science has more important things to do.

Dressed in a short-sleeve madras shirt open at the collar,

PHOTOGRAPHS BY WEBB CHAPPELL

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Berners-Lee still has the excited eyes and unruly blond hair of a college student, and he speaks very quickly when talking about the potential of the medium he created.

After developing the initial proposal for the Web in March 1989, writing code for the first Web server and combination browser/HTML editor in 1990, introducing the Web to CERN (the European Particle Physics Laboratory in Geneva, Switzerland) in December of that year, making it available on the Internet in the summer of 1991, and refining the specs for URLs, HTTP and HTML over the next two years, Berners-Lee landed at MIT in 1994. His post there hasn't diminished the demands on his time and energy. He also helps coordinate the activities of the 150 organizations that constitute the W3C—fast-moving companies like Netscape Communications, Microsoft, Hewlett-Packard, Open Market, Silicon Graphics and Sun Microsytems—to ensure that the software standards that serve as the Web's foundation remain open and nonproprietary. The way Berners-Lee describes it, the job sounds a lot like trying to choreograph a swarm of hornets.

Somehow, though, Berners-Lee remains easygoing. A few moments after the FAQ incident, he apologizes, saying he's just getting tired of explaining the origins of the Web time and time again. With a whiteboard full of scribble as a backdrop, we sit down at the small, round meeting table in his office, and Berners-Lee gets down to explaining the challenges of managing the Web's growth, as well as some of his expectations.

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WM: *When the telephone was invented, people thought it was going to be used for bringing music into people's homes. I'm curious as to how you envisioned the Web being used when you first began developing it.*

Tim Berners-Lee: Initially, I envisioned it as a universal space in which all information could be put to get over the tremendous problems of incompatibility between servers, different data formats and different interactive databases such as VAX Notes and Usenet news. I was interested in it being very much of a space in which it was easy to add information. If you found something wrong, for example, and you had write access in that area, you would be able to go and fix it. The idea was that putting stuff on the Web should be trivial—just like reading it—and with the original World Wide Web program it was. You could make a link just by hitting a key. As you browsed, you could have many documents open at once. The target time for getting from one document to another was a tenth of a second. There would be a sort of sense of equilibrium between people and information, whether that information was Olympian information that descended from the clouds—"the CEO has just decreed company policy will be this," which nobody has write access to—or whether it was something you just scribbled down on the back of an envelope—"hey, you should go and read this." All that information, which is part of how an organization works, is more than the sum of the knowledge of the people.

WM: *Are you surprised by the speed of the Web's growth?*

Berners-Lee: It's been a fairly steady exponential. The number of Web pages, somebody says, is doubling every two months....but it's been doubling every two months for years! And it'll only flatten out when something like 50 percent of American families have Web browsers. And it'll still be taking off elsewhere.

WM: *At what point did it occur to you that you would be able to say that, potentially, 50 percent of American households would have Web browsers?*

Berners-Lee: For the first two years, it was a hard sell, a hard push trying to persuade people to adopt it. And for a long time, within the Internet community, there was a feeling that gopher was where it was at. It was much easier to use, and hypertext was much too complicated. And then in 1992 it became clear that the Web was more exciting to people than gopher. A few people who had been writing consistently for gopher started actually producing Web sites instead. Then it was clear there was no other system competing with it. But there's no one point when I sat back and thought, "Wow! This is gonna actually do it."

The analogy I use is of getting on a bobsled. For a while you're pushing like crazy, you're pushing with all your might, and then there's a certain point at which the thing is starting to run by itself. Then you have a small period of time in which you can jump in, and then you have to be thinking about the curves, and you have to actually get involved. And now we're into the curves.

But there was a period of transition as it started to pick up speed—through '93, with Marc Andreesen's efforts—and a few really good Web sites, like the Vatican's beautiful exhibit of Renaissance art.

WM: *It seems like a huge number of companies have started to realize that the Web and its protocols are a great way to share information internally. Do you see that happening?*

Berners-Lee: I get that question a lot: "What about the intranet? Don't you think this is really exciting?" Which is sort of a waking up to the fact, which has always been the case, that most of the World Wide Web has always been used within groups, within companies. So the companies that win are the ones that learn how to use the Web at every level: for public relations, for internal discussions and for keeping track of the silly decisions we make day-to-day, which sometimes, if you're going to reverse a decision, are very interesting.

WM: *Tell me about your decision to start the Web Consortium, which is a nonprofit organization, rather than going out and launching "World Wide Web Incorporated."*

Berners-Lee: Well, I obviously looked at that possibility. In 1992, I was looking at a lot of different possibilities. I was under a lot of pressure from people who were rewriting their entire business plans around the World Wide Web. They said, "We understand that the Web hinges on some specifications sitting on a disk in Switzerland. How do we know that this is going to be stable? We need something better." The call was for a vendor-neutral forum.

The thing that the Web has given the world is interoperability. Interoperability is something that has just never happened on such a scale. And if that broke, that would be a big shame. The thing spread largely because I didn't make World Wide Web Incorporated in 1991. If I had done it in 1991, it would have been just another hypertext product, another proprietary product. All the big manufacturers would have come out with lookalikes.

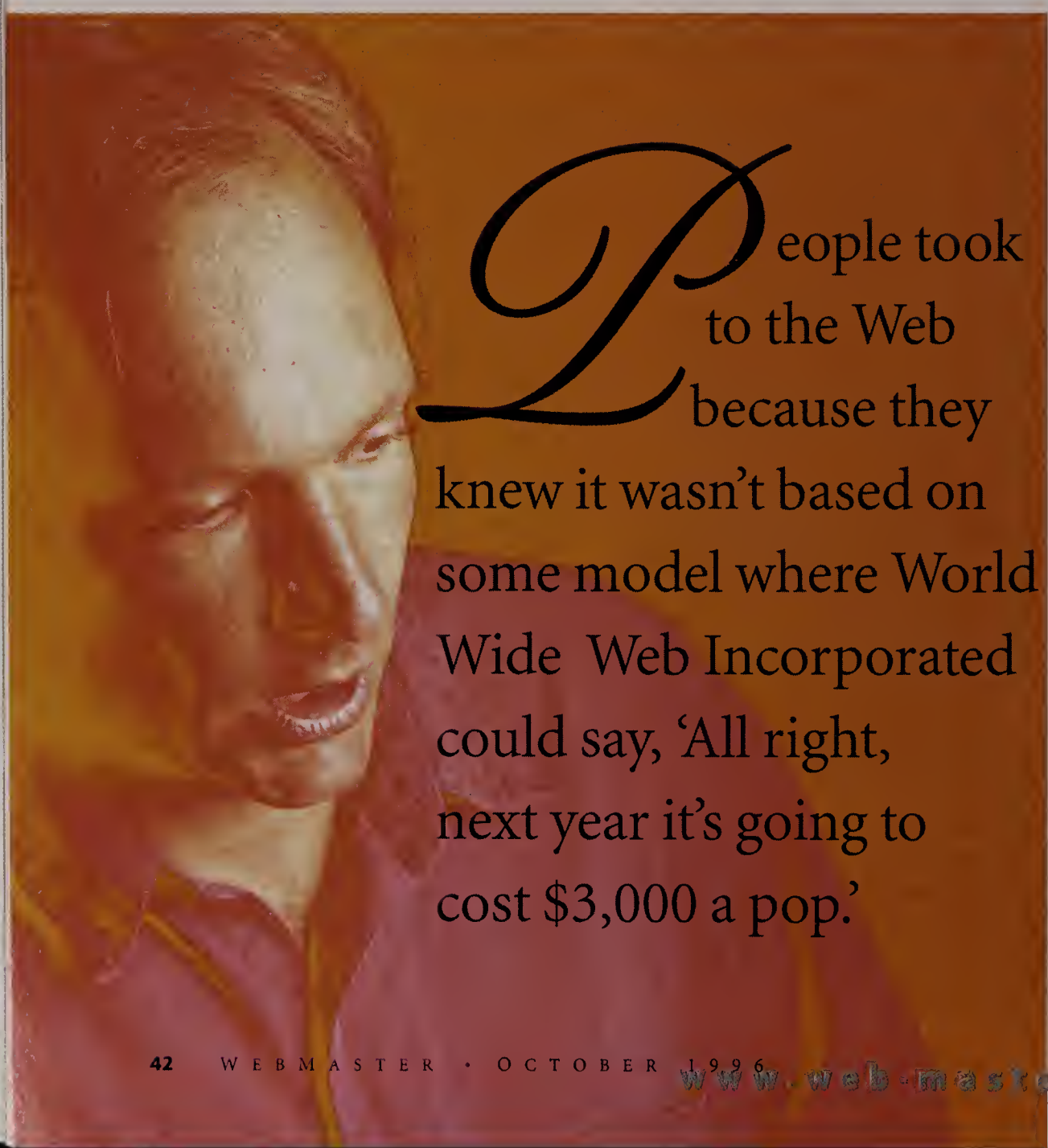
But the fact that the specs were open

and there was an open process discussing them was why people adopted it so fast. They could reorganize their entire activity around the World Wide Web because they knew that it wasn't based on some model where World Wide Web Incorporated could suddenly turn on the licensing and say, "All right, next year everything is the same as last year but 3,000 bucks a pop."

So I went around America and Europe looking for somewhere that would be appropriate [for W3C], and a number of places, including a number of large companies, made a good play for being the World Wide Web Consortium center. But MIT had this great reputation for being open. With X Windows, the Lab for Computer Science said the X Consortium code would be available for free to anyone. And it always was. So that was an indication that the Lab for Computer Science was going to play by the rules.

WM: *The Web Consortium's stated mission is "to realize the full potential of the Web." How do you define that, the potential of this medium?*

Berners-Lee: I don't think I like to define it in any inclusive way, because that would limit it. When I've been speaking, I've been using the word "intercreativity" recently. Because I've said interactivity, and people will say, "Oh, yeah. The Web's great because it's interactive." And they mean clicking on links, or submitting a form. I don't count that as interactivity. Interactivity is when we can sit down and we can actually build Lego blocks together in cyberspace. When we can sit around a table and draw up a plan for something together. We all have a sense of each other's presence, and we can all join in. We can all build knowledge and have our group knowledge represented on the Web. I think that's something that has got to come.



People took to the Web because they knew it wasn't based on some model where World Wide Web Incorporated could say, 'All right, next year it's going to cost $3,000 a pop.'

Then there is a web of trust—computers being able to understand who you trust for what. It will get to the point where a lot of the things you're going to be doing on the Web give you some exposure, whether you're buying things or sending confidential information. You don't want to have to check at every point who it is you're really talking to. You want the software to take care of the security for you. But to do that, it has to understand who you trust. There has to be a language in which people can talk to machines about trust, protocols in which machines can talk to machines about trust. That will be the basis of a lot of things....a lot of things will take off when we have that right.

WM: *In terms of the more advanced stuff on the Web—especially agent technology, like the music recommendation site that came out of the [MIT] Media Lab and the BargainFinder site that Andersen Consulting developed—what do you see as the potential for those sorts of things?*

Berners-Lee: I think those are very interesting. I think agents are going to eventually make life more manageable and be very powerful. I think the things people are doing with collaborative filtering, for example, are interesting. Using the combination of people and machines well is going to be an art. And our long-term push is to get information and machinery to a point where someone can make assertions and say, "I disagree with that document" or "I certify that this document is true" or "I certify that this person owns this house"—things that will allow you to actually verify things. For example, when you buy a house, typically in a lot of countries it involves a title search through all the deeds. The deeds are stored in land registries, and it takes lawyers a long time to go through them. And it's not only the deeds, but you have to do a search for any acts of transfer of land. If all this stuff were on the Web, and if it were in machine-readable form, you'd just be

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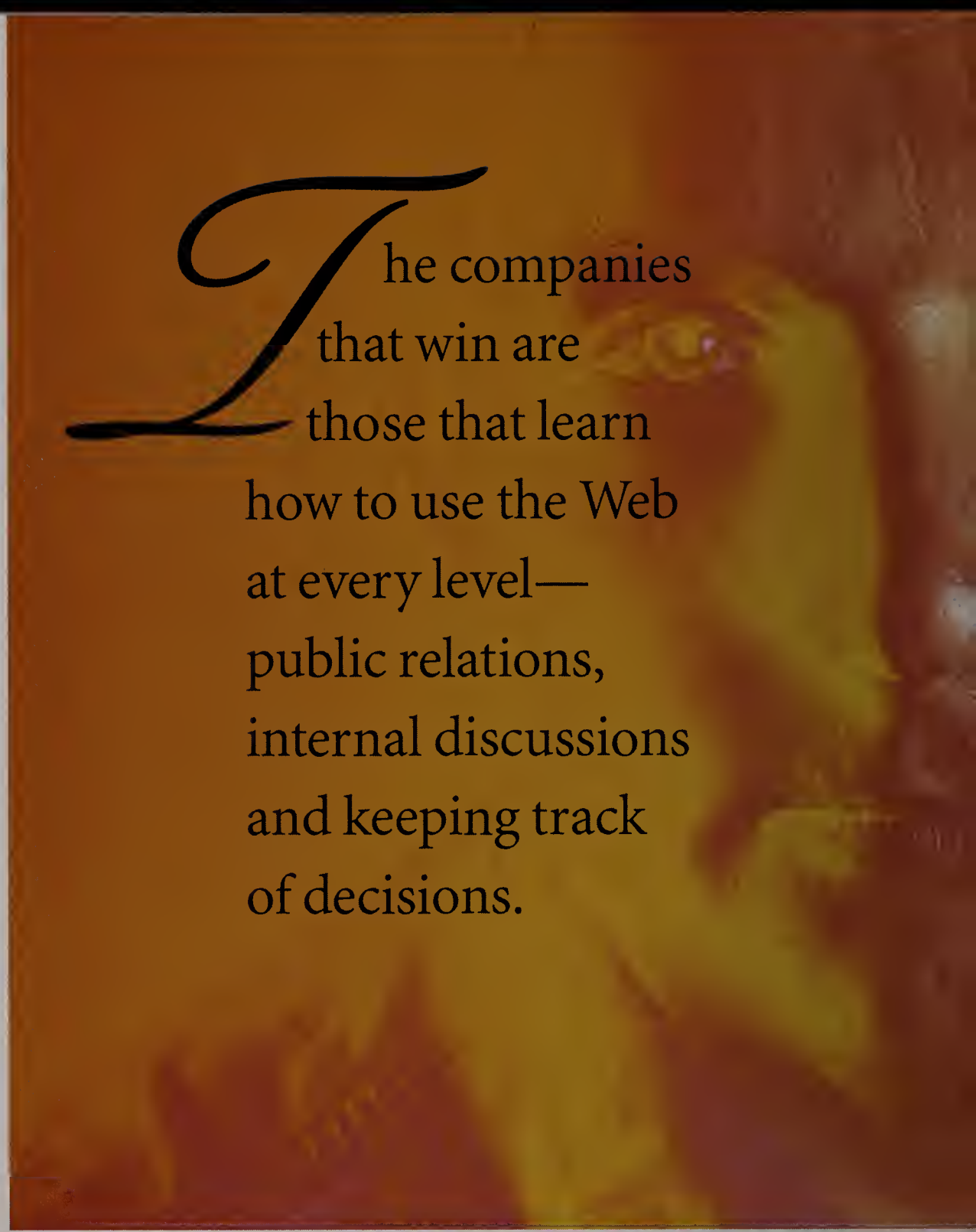
able to ask, "Is this person in this state going to be able to sell this house?"

WM: *How do you see that sort of technology being applied to intranets or corporate networks in terms of decision making and communication inside a company?*

Berners-Lee: One of the exciting things about getting everybody to live in a virtual world—to put their information into an information space—is that you can then use computers to analyze it. So within a corporation, there will be a lot of exciting tools you can use, all sorts of forms of meeting and communication that you may never have thought of before. And you'll be able to use computers to go and have a look at [that organization]. Can you imagine saying, "Here's our organization. Here's its home page. Now off you go, my little agent. Go and tell me what you think." And it may come back and say, "Well, pretty good organization. I can see you have a set of products here, and you have some documentation for them. But there are a few funny things. We've got a module over here that's been written by somebody that's not used by anybody at all. We've got one product over here that so far as I can tell is identical to this product over here, which is made by your Australian division. You know, that one is selling and this one isn't. Also, I've looked at the topology of your R&D department, and, just looking at it from a long distance, it has certain [problems] to it. I've compared the ratio between the valency of the individual people and the diameter of the division itself and the overall connectivity with a Fortune 500 company over the last 10 years. And the result is very worrying. This looks like a division that isn't working very well. Because I've looked at your knowledge space, and the people are just not connected together properly. You should suggest that this person looks at that, and you should suggest that this marketing team look at that product, and you should look at this manager and find out who on earth he's reporting to."



You could imagine that you would be able to make this Mr. Spock-like or, no, Bones-like little thing that looks at the body of knowledge inside an organization and trouble-shoots and tells you what's going on and, in a way, helps us get toward the self-managing team. And that's just talking about it at the organization level. If we can do that, it's very interesting to be able to do that at the democracy level, too. Because what we're really trying to make out of the country is a self-managing team. It's not as though we're really putting one person in charge. We're trying to make the whole thing so that we can all work together. And when you look at it on a global scale, then, even further up, you're trying to find a way that people can work together. So maybe we can improve things at every level.

WM: *Do you see these kinds of developments as a five-year thing, a 10-year thing or something so incremental that you couldn't really keep track of them?*

Berners-Lee: Well, go back to when electricity was invented. Where would you think new uses for electricity would stop being developed? It's just going to be layer upon layer. Hopefully, in a few years, people will stop talking about the Web as an application and start talking about it like they talk about air and water. It'll just be something you take for granted. It's information space. And exciting things will be happening within that space. WM

Scott Kirsner is lead content developer at Boston.com. He can be reached at kirsner@boston.com.

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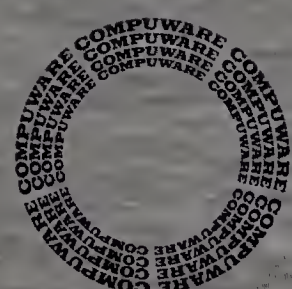

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HATCHING AN ONLINE business ain't easy. You've got to convince investors to fund you, advertisers to support you and customers to visit you. But why should any of those people do any of those things when they—and perhaps even you—don't understand the business you're operating?

The fact that the business models emerging on the Internet are still fuzzy around the edges is no reason to get discouraged. Historically, some of the best ideas have taken a while to come into focus. Take nitrous oxide, for example. Laughing gas was discovered in England in 1772, and by the turn of the century scientists were talking about it in lectures, and the curious were attending ether frolics at entertainment halls. But it was not until 1846 that someone got the bright idea of using the gas to dull pain during surgery.

Of course, no one is laughing today at the difficulties of discovering ways to make money on the Web. "The problem is that the development of the Internet is happening so quickly that we are at a loss to find any business models to put it in," says Howard Anderson, managing director of the Yankee Group. "We search for analogies... and all those analogies are right for a while, and then they are wrong."

The solution, for many established companies and startups, has been to apply traditional business models such as advertising, subscription services and retail sales to the Web, sometimes giving them a little interactive fillip. Hybrid models that allow businesses to market ancillary services to their product lines have sprung up as well. For example, FTD Inc., the flower delivery service, now offers to e-mail customers reminders of birthdays, anniversaries and other bouquet-worthy dates.

> Everyone has ideas about how to make money on the Web. Some are better than others.

Some people, however, believe that for Web businesses to thrive they must cast off their old skins to emerge as new—and, for now, unrecognizable—creatures. "Most people have come to the conclusion that there are entirely new business models on the Web, but we haven't broken the code yet," says Bob Weinberger, vice president of marketing at Open Market Inc., a Web software developer.

This article looks at the advantages and drawbacks of some common Internet business models as well as at some companies that are trying to break the code.

ILLUSTRATIONS BY DAN YACCARINO / PHOTO BY YUKIMASA HIROTA / PHOTONICA

Model Float?

By E.B.Baatz

1. The Advertising Model

Because much of the Web looks at first glance like a traditional publishing medium, advertising has emerged as the dominant business model to date. HotWired Ventures LLC, for example, charges companies as much as $15,000 a month to post banners about their products and services, and advertisers pay between $8,500 and $20,400 for space on Netscape Communications Corp.'s site. Market research company Jupiter Communications LLC pegs the average ad revenue for leading Web sites at $1.2 million for 1995.

Although high-tech sponsors are predictably numerous, Web advertisers are not limited to companies targeting get-a-life engineers. Rather, they represent a range of Fortune 1000 companies. Gatorade, for example, turned up on ESPNet SportsZone, which also signed up AT&T Corp., Visa International and others for what Jupiter calls a "groundbreaking" $100,000 per quarter. And NBC has doled out some of its ad budget to Infoseek Corp., HotWired and Yahoo Corp.

"Advertising revenue is a juicy target," says Eric Schlachter, a lawyer at law firm Cooley Godward and an adjunct professor of cyberspace law at Santa Clara University. "With TV, cable and classified advertising collectively generating [tens of billions of dollars] in revenues last year, everyone wants a piece of the action." For now, however, the online piece is small: A Forrester Research Inc. study from June predicted that companies will spend $10 million to advertise on the Web this year. By 2000, the study said, that figure will grow to $2.2 billion.

Not surprisingly, the owners of many sites have found advertising a very hard sell indeed. It's not just that potential sponsors don't "get it," although that's certainly been the case. It's also that many companies don't understand how the Web changes communication between consumer and advertiser. "The traditional advertiser is centered on the firm broadcasting a message to the consumer, with the flow of information predominantly from seller to buyer," says Richard T. Watson, a University of Georgia business professor and co-author of *Metamorphosis: An Introduction to the World Wide Web and Electronic Commerce* (John Wiley & Sons, 1996). "The Web puts this flow into reverse, and this shift in communication patterns is profound."

What this shift enables is one-to-one advertising—or "narrowcasting"—which is wonderful in theory but often difficult in practice. And it has caused advertisers and Web publishers to scratch their heads about how to price ads on the Web and monitor their effectiveness. The result is that advertisers are starting to experiment with alternatives to the traditional cost-per-thousand model. "The technology is coming so that advertisers can target their audience, track click-through and pay only a nickel an impression," says Dykki Settle, vice president of technology for Ventana Communications Group, the official publisher of Netscape computer books.

That's precisely what The Procter & Gamble Co. started doing in May in a well-publicized deal with mega-index Yahoo. Rather than paying a set fee to place its banner on Yahoo's site, P&G is paying only for customers who actually click on that banner.

Even more innovative is the approach taken by CyberGold Inc., a startup masterminded by software entrepreneur Nathaniel Goldhaber together with advertising heavyweights Regis McKenna and Jay Chiat. CyberGold charges an advertiser only for visitors who have actually clicked through its site. And the Web surfer who moves past the initial banner gets rewarded by CyberGold with "digital currency," that can be "spent" online for merchandise, discounts and the like. "It's analogous to Publishers Clearing House," says André Marquis, director of marketing for CyberGold. "The potential for reward increases the farther into the Web site the consumer goes, and the advertiser, via CyberGold, pays the consumer for his attention."

While outfits like CyberGold try to quell the confusion about tracking and billing, several high-profile failures have recently dimmed the prospect for online ad sales. In April, Time Inc. New Media's senior vice president announced that the company's Pathfinder Personal Edition service would shift to a subscription model because an "advertising model doesn't support the cost of creating content." And Songline Studios Inc.'s *Web Review*, which had attempted to operate a free information service supported by advertising, pulled the plug in May. At the time, president Dale Dougherty said *Web Review* would return only if at least 5,000 people agreed to pony up $19.95 each for a six-month subscription.

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ICat Corp.
www.icat.com

Industry.Net Inc.
www.industry.net

The Internet Report (excerpt)
www.ms.com/misc/inet/morganh.html

Internet Shopping Network
www.isn.com

Jupiter Communications
www.jup.com

MapQuest
www.mapquest.com

Onsale
www.onsale.com

Open Market Inc.
www.openmarket.com

PhotoDisc Inc.
www.photodisc.com

Ventana Communications Group
www.vmedia.com

Webwatch by Eric Schlachter
www.boardwatch.com/mag/95/jul/bwm39.htm

Yankee Group
www.yankeegroup.com

www.web-master.com/

2. The Subscription Model

TIME'S AND SONGLINE'S decisions to pursue a subscription model—in which customers pay to access information—make sense from a normal economic perspective. But not much is normal on the Net, where consumers expect lots of free stuff. And the economics of free stuff, except in the software industry, doesn't look so good.

"Web site entrepreneurs are not prepared to hear that the subscription model is uniquely unsuited to the Web environment," says Schlachter. "The problem is that it's not clear that any profits are going to be available in Webspace by trying to mimic the commercial online services."

Jim Sterne, president of Target Marketing of Santa Barbara, agrees. "The only one I've seen so far that makes sense is *The Wall Street Journal*, because the price is right and the brand is trusted," says Sterne. At $29 per year for readers who subscribe to the paper version and $49 for nonsubscribers, a personalized *Journal* is a bargain. "If *The Wall Street Journal* doesn't make it, no one will," says Sterne.

Other high-profile publishers that have experimented with the subscription model include the *San Jose Mercury News* and *USA Today*. (*USA Today* decided against selling subscriptions in August 1995, at the same time it abandoned its proprietary Internet access business.) But no one is talking about how many customers they've signed up, so their success is tough to gauge.

Paradoxically, some argue that the existence of vast quantities of free information on the Net will actually make people more willing to pay for the best stuff. "As the amount of free garbage on the Web goes up, more people will be willing to pay for branded information," says Settle. He mentions stock investment and pornography sites as examples of flat-fee subscription services that are reportedly doing quite well online.

Even if mass marketing a subscription service to consumers doesn't work, business-to-business niche subscription services may. For one thing, as more of the Web is commercialized, the freebie culture starts to disappear. Also, a Web startup can survive a long time with minimal capital equipment costs and with no expenses for printing or advertising. "If a company can build subscribers in a small but rapidly growing market with [low costs] and maintain that share when the market gets bigger, it should reap good profit margins," says Mary Meeker, an analyst of new media at Morgan Stanley & Co.'s equity research department.

Another approach with revenue potential is microsubscriptions, whereby hundreds of thousands of users pay pennies for snippets of information. Instead of paying $20 for an entire cookbook, for example, a consumer would shell out five cents for a single recipe. The software for accepting such minuscule sums is still a work in progress, but "any publisher with any technical savvy is looking into micropayment standards for the Web browser," says Settle.

3. The Retail Model

DROWNING OUT THE NOISE around advertising and subscribing, Web retailing is now generating the biggest buzz. While retail shopping on the Internet amounted to just $254 million at the end of 1995, that number will grow more than 10 times to $2.7 billion by 1997, according to the Yankee Group.

One of the biggest success stories in this area so far has been the Internet Shopping Network, which sells approximately $1 million worth of computers and other products every month. But ISN's approach has hardly been innovative. In fact, it precisely mimics that of its parent company, cable TV's Home Shopping Network. "We work very much like a normal retailer, except we use e-mail," says Bill Rollinson, co-founder of ISN.

Companies that are both making money and pushing the retail envelope share three characteristics, says Gregory Wester, director of interactive commerce at the Yankee Group. First, they have created strong brand identity. Second, they know their customers. And third, they sell inexpensive consumer products such as flowers, books and CDs that the buyer doesn't spend much time deciding to purchase.

Net retailers also have a better chance if they aren't bogged down by established, expensive distribution networks. There are 5,000 to 8,000 sites selling products through Web catalogs, and many more are coming online every month, according to Craig Danuloff, president and CEO of ICat Corp., which helps companies set up such catalogs. "The high-profile success of a company like Amazon.com Books has an impact on the market," says Danuloff. "It's radical. Amazon has no capital, no infrastructure, no warehousing, no customer service, no shipping. All they do is market books on the Web, and their sales are exceeding the busiest single B. Dalton bookstore."

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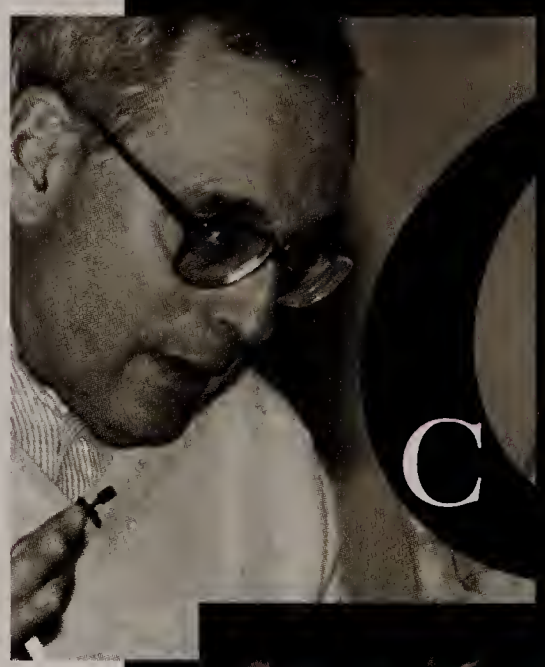

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Other companies, adopting the "safety in numbers" maxim, are flocking to Internet malls. In this model, a single operator gathers numerous businesses on one site, often hosting them on its servers. Tenants benefit from mallwide promotions and increased traffic; the operator takes a cut of the revenues and/or a location fee.

"Everyone was talking about the mall Web model in 1995, but I'm bearish now," says Schlachter. "I'm doing a deal now where the mall operator wants 50 percent, and I am skeptical. I simply don't see the mall adding much value." Sterne likewise thinks Web malls are, well, "stupid." In real life, says Sterne, "there is value in driving to one place where all the stores are together, but on the Web, all the stores are just 24 inches from my nose. And I can create my own 'sporting goods mall' on the Web, for example, simply by typing in 'sporting goods' in Yahoo."

Still, some of the more specialized, business-oriented malls are flourishing. Industry.Net Online Marketplace, for example, features a collection of Web business centers for such industrial products as fluid power pumps and bearings. Industry.Net Inc. reportedly generates about $20 million a year in Web business alone, and Online Marketplace is generally considered one of the earliest and most successful vertical malls. But once again, the lines are blurring. CEO Jim Manzi, who recently assumed the helm at Nets Inc., (a holding company formed from the merger of Industry.Net and AT&T Corp.'s New Media Services unit), says Industry.Net's main competitors are Cahners Publishing Co. and Thomas Publishing Co., both traditional print publishers. And Manzi, the former chief of Lotus Development Corp., says he sees a future in which the company will act more as a broker, facilitating—and charging for—transactions between buyers and sellers.

4. The Software Model

THE ONLY ESTABLISHED business model that can credibly claim to be new and largely Net-specific was pioneered by the software industry. The obvious reasons: Engineering and programming types swarm over the Net like algae in red tide, and the product itself can be distributed, as well as marketed, over wires.

But software is also unusual because it operates under a principle of "increasing returns" in which market leaders win big and losers are crushed, according to W. Brian Arthur, a professor at Stanford University and the Santa Fe Institute. Under this model, the more software a manufacturer gives away, the more likely it is that the product will become a standard. That leads to higher returns, which can then be used to kill the competition.

Today, selling software at cost—or even at a loss—in order to move higher margin upgrades, support services and, as in the case of Intuit Inc., even checks, is the norm in the packaged software industry. Netscape, of course, stands as a shining example. Computer games, such as Doom, have also prospered using this model.

Another advantage to the Internet is that it offers transaction options—such as pay-for-use—not available to the shrink-wrap market, according to industry expert Esther Dyson. "The market, with the Internet leading the way, is moving in the direction of compensating people for services related to information, not the information itself. So the 'book' model of the software package will become less prevalent in the Internet marketplace," says Dyson.

The popularity of procuring software over the Net is changing life even at the most established companies. In August, IBM Corp. announced a service, called AlphaWorks, that lets Web users download work-in-progress software for free from its research facilities. Instead of spending months preparing lengthy market research studies before releasing a product, IBM will now be able to gather statistics based on Web hits, do its marketing plan on the fly and roll out new Internet products much more quickly.

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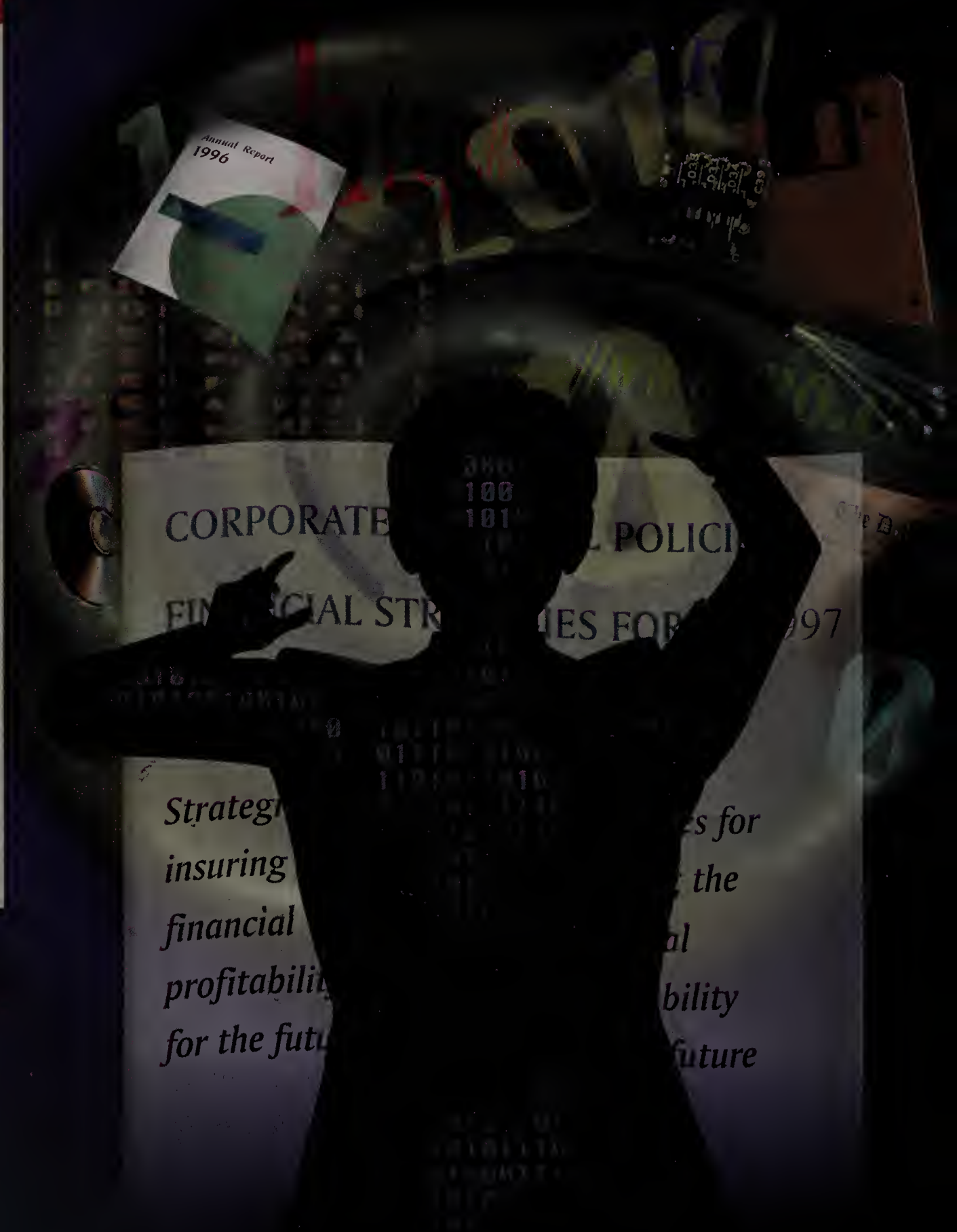

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Leading the Charge in Turbulent Environments

IT as a Change Catalyst

"It used to be that we didn't talk about unannounced products and we didn't release a product until we had a 35-page license agreement, so this is a big, big change," says Andrew C. Morbitzer, IBM's manager of AlphaWorks advanced Internet technology.

5. Emerging Models

THE WEB'S MOST INTERESTING models are those for which we don't yet have names. Like doctors working with laughing gas in the 1800s before the legitimizing moniker of "anesthesia," entrepreneurs in basements and office towers around the world are creating new business models without the words to describe them.

A startup called Onsale, for example, operates like a cross between a retail store and a game (see *WebMaster*, January/February 1996). The company buys refurbished and close-out products, including PCs and car audio systems, then sells them in a Dutch auction (in which the top five bidders get the product for the second-highest bid). Customers tack e-mail messages onto their bids to psych out the other players, and winners get their names posted on the site.

Another business with an unusual model is GeoSystems Global Corp. The company, which offers several services on its MapQuest site, is pursuing the subscription, advertising, and software and services models simultaneously.

A spinoff of R.R. Donnelley & Sons Co., GeoSystems has been making maps for decades, and it moved to a CD-ROM format six years ago. But the company's executives were disappointed with the results. "We always felt that applications for electronic mapping should be taking off faster, but it didn't really accelerate until the Web was invented," says Perry Evans, president of the company's new MapQuest Publishing Group.

Now Geosystems makes money by creating and hosting digital maps for companies like The Sharper Image for a fee of $15,000 to $25,000 per year. "The company sends us a file with store locations, and we geocode the stores on our server," Evans explains. An even newer service, called MapQuest Connect, allows companies to dynamically code maps on their own servers. And in order to build a strong consumer franchise and open up a new advertising revenue stream, the MapQuest services allow visitors to plot their own geographic landmarks—home, church, etc.—on maps residing on the site.

Then there's PhotoDisc Inc., which sells stock photography over the Web to designers and site developers. The company started off using the Web to market its CD-ROM products and then, for a three-month period in 1995, allowed customers to download one free image each. Now it sells stock photos online, for prices as low as $9.95 and as high as $189.95.

That sounds like a standard transaction model, but the marriage of software with the stock photo business has produced something more unusual. PhotoDisc is using technology from Virage Inc. that allows customers to search for photos based on criteria such as color or to isolate a piece of a photo—a nose on a face, for example. Such features have generated a surge in demand: PhotoDisc, which uses server and database management products from Connect Inc., generated $300,000 in sales in its first six months, from 60,000 hits and 1,000 unique visitors per day. Those figures are now "screaming upwards," according to Vice President of Business Development Bill Heston, who says the company currently brings in as much as $100,000 per week.

"We're still working on our pricing model, and the business model is emerging rapidly," says Heston. "But we're starting to see that we're selling not just images. We're selling an image acquisition tool right at the desktop."

That's a whole new way of thinking. On the Web, nothing less will do. WM

Senior Editor E.B. Baatz can be reached at ebaatz@cio.com.

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Java Gets Real

THREE PROGRAMMERS WHO PUT THE REVOLUTIONARY LANGUAGE TO WORK TELL US WHAT THEY'VE LEARNED

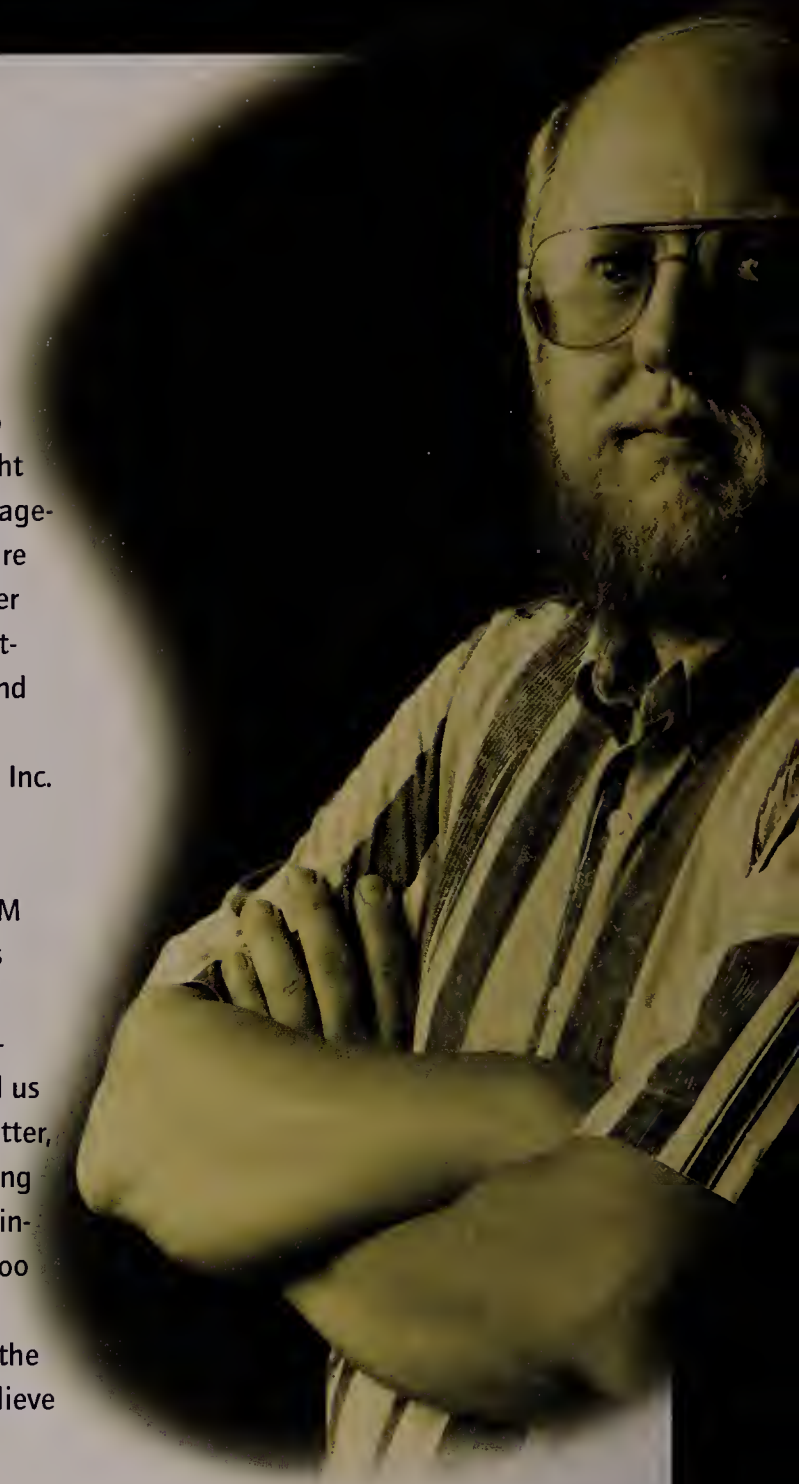
BY ART JAHNKE

When it exploded on a willing world more than a year ago, Java promised to rewrite the rules of the Web. The revolutionary new language had all the right adjectives attached to it. It was simple, object-oriented, multithreaded, garbage-collected, secure, robust, architecture-neutral, portable and dynamic. Software developers welcomed its panplatform ability: With Java, they would no longer have to test and retest the consistency of programs running on different platforms. Everyone else loved it because it promised to make things move around on our computer screens, and that was neat.

In fact, Java was so neat that it helped raise the value of Sun Microsystems Inc. by more than $6 billion. It also helped fill the shelves of America's bookstores with dozens of titles promising to instruct eager programmers in its finer arts.

The new language has been licensed to companies like Microsoft Corp., IBM Corp., Borland International Inc., Oracle Corp. and Netscape Communications Corp.—not to mention the dozens of startups that are designing their tools around it. But finding someone who is using Java, really putting it to work instead of getting ready to put it to work, is harder than the hoopla would lead us to believe. In fact, the lack of Java programs on the Web has engendered a bitter, "where is it already" reaction to the hype. Scott Rosenberg, for example, writing in the popular Web magazine *Salon*, decries the "paucity of imagination and innovation" of Java-enabled sites. Others criticize Java for being too slow and too hard and for delivering too little for too much effort.

For this Field Report, *WebMaster* found three developers who have taken the leap and put the new language to work. All of them have good reason to believe Java is here to stay, even if —like the Web itself—not in its present form.



▲ *Sam Pendleton: Java's power runs deeper than animation.*

PHOTO BY JAN OSWALD

Sam Pendleton

Cadis Inc.

SAM PENDLETON is a senior member of the technical staff at Cadis Inc. (*www.cadis.com*), which uses Java in its new search engine, Krakatoa. In Java's first major commercial application, Krakatoa is employing it to transform National Semiconductor Corp.'s Web site into a client/server environment.

The tool gives customers immediate and intuitive Web access to information on more than 30,000 NSC products. The object-oriented Web authoring and search-and-retrieval technology allow users to locate what they need in seconds, even if they don't know the order number. Krakatoa accomplishes that by first searching broad categories of components, then narrowing the search to subclasses and their attributes. NSC claims that since the installation of Krakatoa in December 1995, its Web site traffic has grown 20 percent each week.

Java allows the application to take advantage of the client's processing power, says Pendleton, whereas in the common gateway interface world all the work would be performed by the server.

"With HTML, the client is incapable of doing anything other than requesting the next page," he explains. "With Java, we can create an executable client that can interact with a server. With HTML, you have to move data and presentation information, which can contain control information in the form of buttons and forms. With Java, the exchange between the client and server is now data."

As part of the team that built Krakatoa, Pendleton naturally was among the first to celebrate its success. Yet even he is not surprised by how few Java tools are on the market.

"There are whole groups of people who believe that Java is a fad,"

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"Java is an elegant and easy-to-learn programming language, but it is still a programming language." —Jim Flynn

he says. "They think it isn't worth learning. If you read the Usenet groups you'll find that about half the traffic—about 400 messages a day—is a discussion of whether or not Java is going to survive.

"I think a lot of people are waiting for a mature technology. Java has something new in it every couple of days. Just three or four months ago you had new releases of the language coming out at a rapid pace, coupled with the fact that Netscape was the only Java-enabled browser."

Pendleton believes Java will continue to change rapidly at least through this year. He also says the primary value of the technology has been eclipsed, for the time being anyway, by its more sensational animation capabilities.

"What Java did is create a mechanism that allows you to run software on multiple platforms," says Pendleton. "But I don't think a lot of people are using it for that. A lot of people still see Java as a mechanism for making some animated graphics on your Web page, and it doesn't get much deeper than that. But Java's real power is its ability to build an application that you can run across the network—in our case in a client/server relationship. Java gets developers out of this business of having to write software once and then port it to nine different platforms."

Pendleton is convinced that those rewards far outweigh the effort needed to learn a new language. At Cadis, where Pendleton's team had a background in C++, Java's base, there was little resistance to the new language. Even last winter, when computer scientists at Princeton reported that Java was plagued with security flaws, and a spate of articles suggested that those glitches could cool the industry's enthusiasm, Pendleton remained unconcerned.

"We worry about security only in the sense that we provide a product we expect people to use and we don't want to provide a security risk," he says. "But am I worried about the security concerns people are finding and publishing in the papers? Not terribly. I think they are doing us a favor by identifying security risks early on so we can get them fixed. If you look at where Java is in its life cycle and the security problems we're finding, it's much better than Unix was in its early days. We are miles ahead, yet people are out there complaining that it's not completely secure. I think the only way to be completely secure is to turn the computer off."

Pendleton says he is concerned about other problems, however. One is a consistent difficulty getting Java programs to display correctly on Microsoft Corp.'s Windows 95. "The [Abstract Windowing Toolkit] libraries that have been developed for Windows [95 and NT] are not yet correct," Pendleton explains. "This is preventing companies from releasing their Java applications to their customers."

Still, Pendleton expects that problem, and all other glitches affecting Java, to be fixed. He believes the new language is going to thrive. "Over the next year, things are going to become more and more robust," Pendleton says. "You're going to see an environment where there is a lot of stuff out there, and you are going to have to know a lot to build a robust Java application."

The real challenge, he says, will be keeping up with—and exploiting—Java's constant mutations. "You have to be able to read where the language is going and implement very quickly," Pendleton says. "In fact, there is a big discussion about whether Java now is complete as a language. Sun has gone to great lengths to make it very simple, and now a lot of people want to add all this garbage, like operator overloading, so it will be complete again. I tend to be more conservative and say just leave it alone."

Gary Aitken

Integrated Computer Solutions Inc.

GARY AITKEN is a guru. He is one of those developers whose skills are in such demand that employers tend to give him what he asks for. For example, Aitken asked his current employer, Integrated Computer Solutions Inc. (*www.ics.com*) of Cambridge, Mass., to let him continue working in a part of Montana that he describes as "as far as you can get from anything."

The telecommuting was fine with ICS and wonderful for Aitken, who spent seven years as chief architect of the OI Library, a C++ library of graphics interfaces for Unix. For the past nine months, Aitken has been using Java to build graphical interfaces for business systems. More than most developers, he knows what kind of

magic Java can work.

"Right now," says Aitken, "there are only two things that Java can do. I can write once and deploy on multiple platforms, and I can download dynamic behavior that will allow images to move around an interface."

Specifically, Java does away with complex pointers found in C++ code. Pointers efficiently pass information but not all at once. You pass the address and receivers then use it to get what they really want. "Pointers are extremely difficult as a concept," says Aitken. "Java has removed those, and that means that everybody, not just the average Joes but the gurus as well, has to deal with this simpler paradigm."

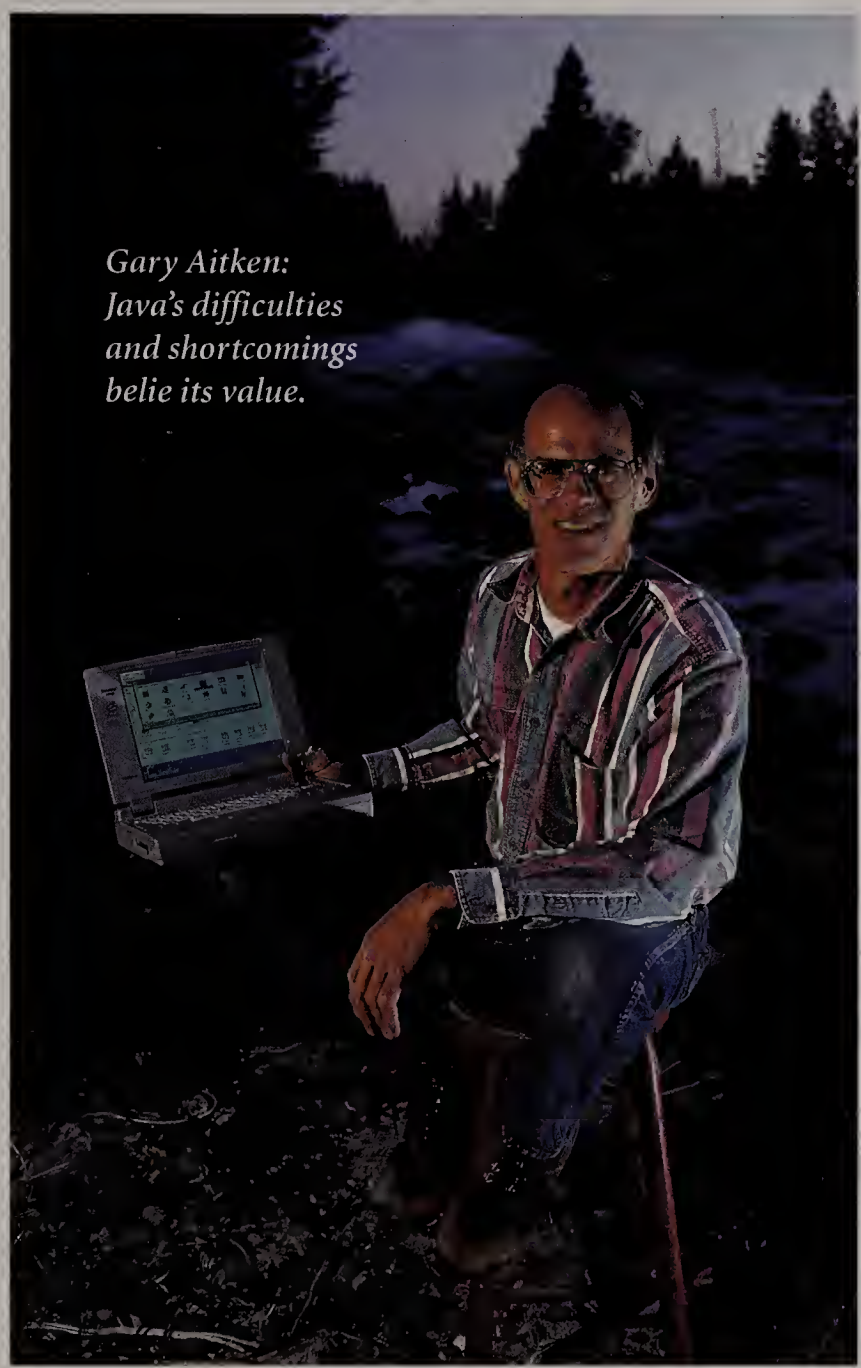
Still, when programmers begin to exploit Java's full potential, the code they write will be far from simple, according to Aitken.

"There have been a lot of claims made that Java is an easier programming language than C++," he says. "Yes, the syntax is simpler, but the hard part about Java is exactly the same as the hard part with C++: teaching people good object-oriented designs and good object-oriented concepts. If you don't understand that, you're going to be writing programs that are just as crummy with Java as they are with anything else. For those programmers who do understand object-oriented concepts, the language is a piece of cake."

The cake, however, still has some lumps in it. And getting them out is much harder than it is with other languages, according to Aitken.

"The biggest problem with Java is that there are no good debuggers," Aitken says. "If you ask people who are writing Java code they will tell you that their primary debugging tool is the print statement, which is basically a command telling the computer to 'print out' some quantity in human readable form. This is a very primitive way of debugging, but it is what most of the world is doing in Java today. That is certainly going to change over the next 12 months. But if you jump in today, don't expect the same kind of tools that you have available for C++.

"Another thing that makes Java much more difficult is that it is multithreaded. In a traditional program, you start at the top and there is one path that you follow. In the Java environment, particularly if you are using it for graphical display, there is more than one thread. You have multiple things happening at the same time. You don't have a complete sequential flow, and this makes debugging more difficult."



Gary Aitken: Java's difficulties and shortcomings belie its value.

PHOTO BY MICHAEL GALLACHER / LIAISON INTERNATIONAL

In addition, there are some things Aitken would like to do that Java won't allow.

"Things such as tying two pieces of code together are very difficult in the pure Java environment," says Aitken. "They are not difficult to do if you are willing to step out of Java for a minute and do a little bit of C code and step back into Java. But the reason for not doing that, the reason for staying in a pure Java environment, is the ability to download over the Net. You don't want to lose that."

Jim Flynn

@Work Technologies

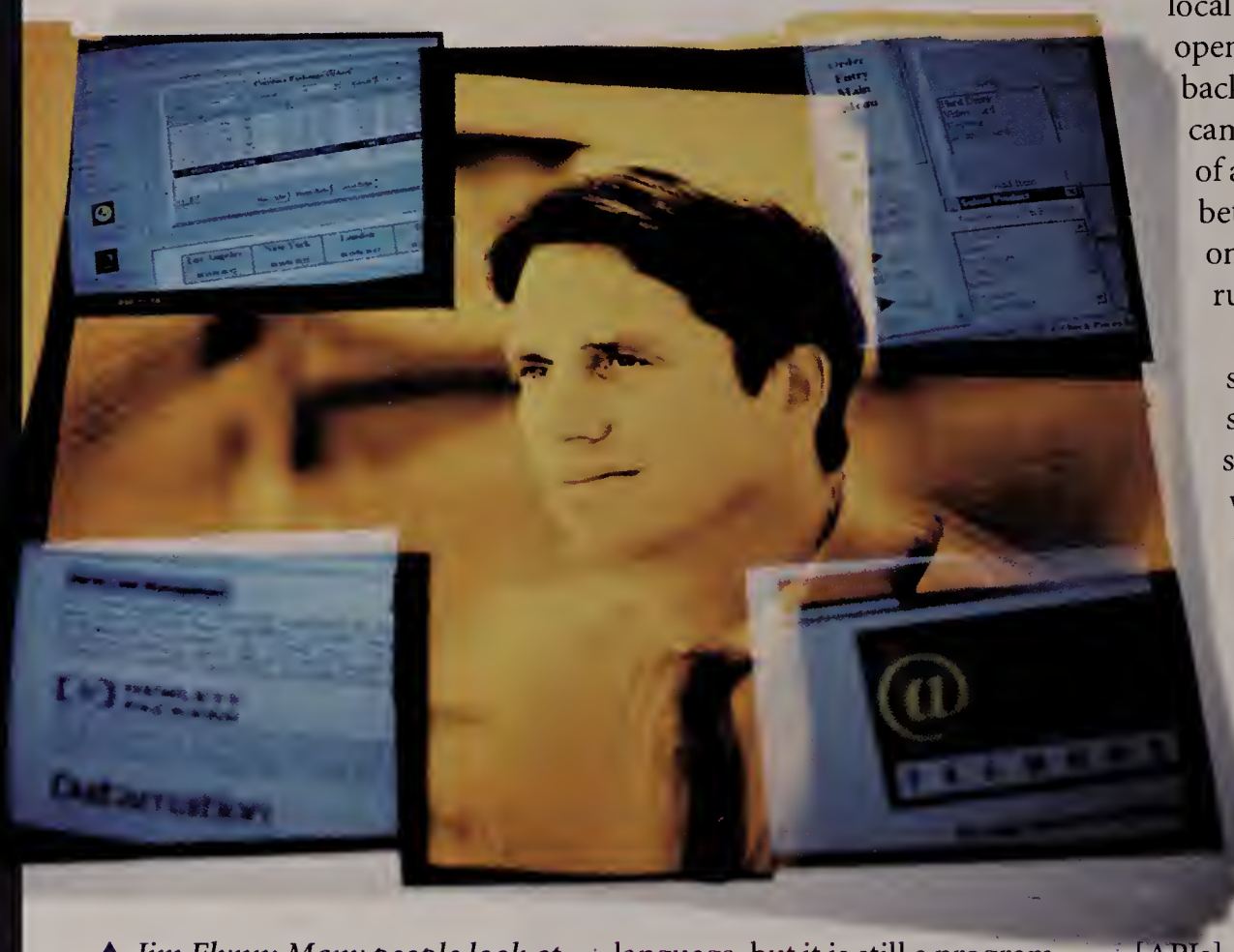
JIM FLYNN is the general manager and co-founder of @Work Technologies (*www.worktechs.com/*), a year-old Internet software developer and consulting company. Before starting @Work Technologies, Flynn was vice president of business development at Greenbar Software, a designer of client/ server Windows-based document-management software. He is also co-author of *Visual J++ Java Programming*, published this fall by New Riders, a division of Macmillan Computer Publishing.

Working with other developers at @Work Technologies, Flynn has created a Java applet that allows Internet users to initiate text-based chat sessions via the Internet Relay Chat (IRC)

protocol. The applet, called TrustNet and developed for T3 Technologies Inc., will be used to set up "birds of a feather" discussion groups by banks, trust companies, investment management companies and technology vendors. Because the applet is downloaded dynamically, users can tap into chat sessions without installing a separate IRC application on their desktops. And because Java is platform-independent, the same version of TrustNet works for Mac, Unix and Windows users.

At @Work Technologies, Flynn says, most programmers had a background in C++, so learning Java was not a problem. "Anyone with experience developing object-oriented, event-driven languages, such as C++, should find Java easy to learn," says Flynn.

But whether there are enough of those people out there is another question. "I've seen a lot of companies without the slightest bit of expertise or background claim to be able to develop Java applications," says Flynn. "Just because somebody can create an HTML page or work with Adobe Photoshop doesn't mean they can create sophisticated Java programs. Java is an elegant and easy-to-learn programming language, but it is still a programming language.



▲ *Jim Flynn: Many people look at Java long enough to find something wrong with it.*

"Many people look at Java long enough to find something wrong with it," says Flynn. "And many people have a natural tendency not to want to learn something new. It reminds me of people who said, 'the PC is just a toy; I only want to develop in C or on a VAX/VMS system.' We've seen many otherwise knowledgeable technical people dismiss Java as a scripting language. These people are doing a disservice to themselves."

Although @Work's TrustNet applet is intended primarily for financial institutions, Flynn is unconcerned about security breaches. "Several very smart people have been able to uncover security holes in Java and in Java-based browsers, but I think over time these holes will be plugged," Flynn says.

Among @Work's concerns are the security restrictions imposed by Java and Java-enabled browsers. For example, Java applets cannot access local files. And Java applets can open only a socket connection back to the host from which it came. (A socket can be thought of as a communications line between a program running on a client and a program running on a server.)

While there are good security reasons for those restrictions, they can be showstoppers for developers who want to create more sophisticated network-centric applets. "We're looking forward to the day when Java code can be signed so the user can grant 'trusted' applets additional privileges," Flynn says. "We're also hoping that some of the many application programming interfaces [APIs] announced by [Sun's JavaSoft division] will help things. With Java, like any platform-independent environment, sometimes you're limited to the lowest common denominator. Suppose you want to implement a document imaging system in Java. Java does not lend itself to the kind of image compression/decompression you can do with pointers and native code in C or C++. We'd be very happy if JavaSoft would deliver the new APIs on schedule." WM

Senior Editor Art Jahnke can be reached at ajahnke@cio.com.

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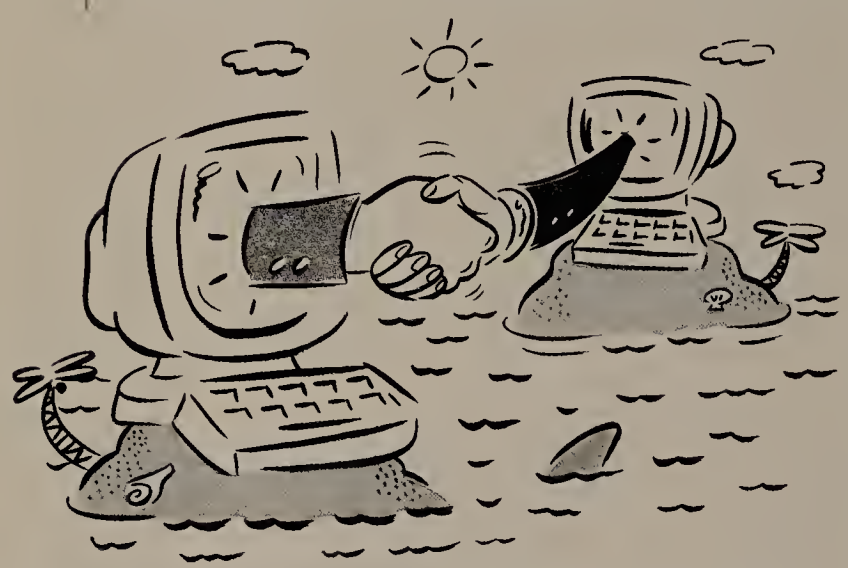
Continued from Page 64

HANDS ACROSS THE NETWORK

While Lotus Notes is getting Webbier, the Web has been getting more Notes-esque, at least in terms of its groupware capabilities. Now comes WebShare, a product created to exploit the collaborative potential of intranets.

WebShare, from Radnet Inc., brings together people who time and distance have put asunder, allowing them to share knowledge, expertise and, of course, documents. Users can submit to electronic libraries, files of product literature, sales presentations, diagrams and photos; teams can collaborate and share up-to-the-minute materials.



WebShare also has the advantage of being quickly deployable. There's no need to tinker with your network or mess with complex client software—all applications are accessible from your favorite browser. And because it's based on open Web standards (HTML, SMTP, SSL, Java, et al.), WebShare can be easily expanded as the technology marches forward.

Perhaps the most attractive thing about WebShare, though, is its cost: With a sticker price of $1,495 per server license and no client license requirements, the product is considerably cheaper than proprietary systems. It's "Notes for the rest of us," as the company says fondly.

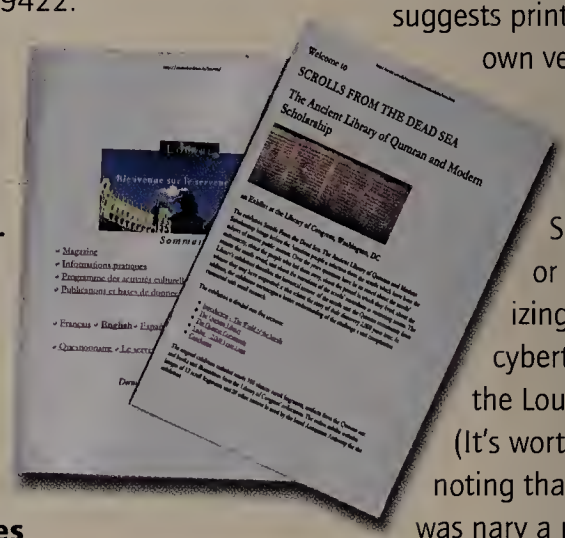
For information, head on over to *www.radnet.com* or call 617 577-9422.

HARD COPY MADE EASY

We were sitting here the other day, trying to figure out why someone had sent us a brochure for Napa Valley Wine Tours (nonvirtual vineyards all) when suddenly it dawned on us: The pamphlet was composed entirely of Web pages!

The brochure was a sample of the work performed by Surf 'n' Print, a product from BookMaker Corp. that allows PC users to transform Web pages into dandy little hard-copy pass-alongs. Two clicks and any Web page is reduced, paginated (double-sided) and compiled into a booklet for you to print.

The suggested applications were intriguing as well: Vacation-minded surfers could compile tour books featuring maps from one site, flight information from another, and hiking and biking trails from yet another; fantasy sports enthusiasts could store all their player stats in a single booklet rather than spend the money to read them online. The company also suggests printing your own version of the Dead Sea Scrolls or immortalizing your cybertour of the Louvre. (It's worth noting that there was nary a mention of that messy thing called copyright.)



A 10-pack edition of Surf 'n' Print is available for free on BookMaker's site; unlimited use costs just $9.95. But the product produces only 5 ½-by-8 ½-inch digests, so if you want more sizes and types you'll have to shell out for the company's ClickBook tool. Download at *www.clickbook.com* or phone 'em at 415 856-4799.

ILLUSTRATION BY JOHN CLARKE

A NEED-TO-KNOW BASIS

"All the News That's Fit to Print" used to be a boast, but it's starting to sound like a threat. With *The Wall Street Journal*, The Associated Press and practically every other major news gatherer online, by the time desktop readers find the right stories it's time to go home.

CompassWare Development Inc. aims to solve that problem with IntraNews, a news management application for intranets. Corporate users request information by entering simple English language statements. IntraNews continuously monitors and filters real-time news feeds and sends relevancy-ranked stories to the desktop.

IntraNews monitors feeds from Dow Jones & Co. Inc.'s DowVision (which distributes, among other things, the *Journal* and the *Times*es—*New York* and *Financial*) and WavePhore Inc.'s Newscast (carrier of The Associated Press, Reuters and others). The product server, which lives on the enterprise network, receives 20,000 to 30,000 stories per day over leased lines and X.25, satellite and FM delivery mechanisms.

For more information, see them on the Web at *www.compassware.com* or call 212 685-4220.

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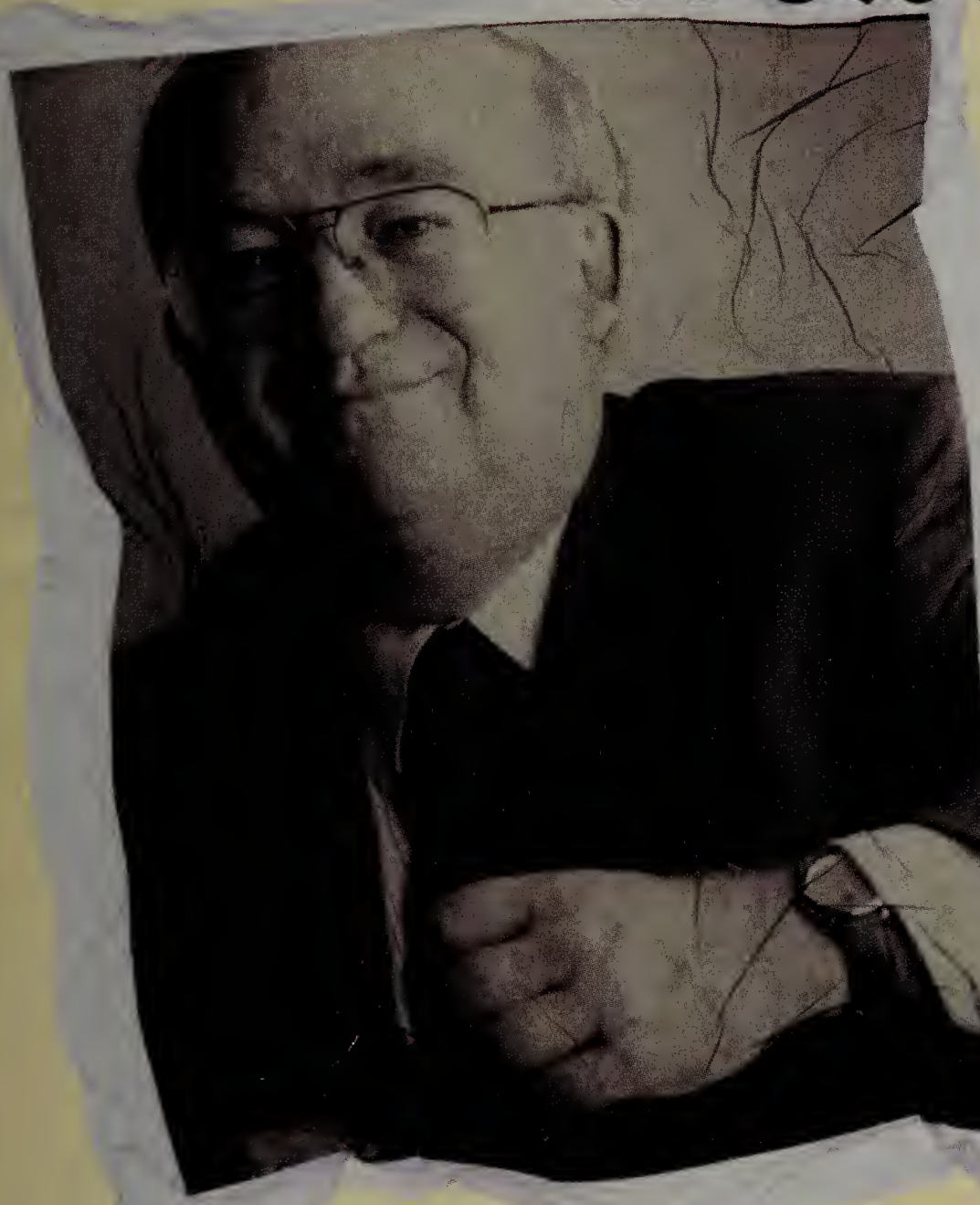
3M Gets Stuck on the Web.



David P. Drew

Vice President of Information Technology
3M Corporation
IT/World Wide Web budget: $500 million

What's Hot Right Now?

"Internal applications are keeping us busy. When we started Web initiatives, we focused on external apps; these days we're exploring the Internet as an internal communications and information resource tool."

Why Read WebMaster?

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What's Your Role In Purchasing Web Products and Services?

"Our Internet support function reports directly to me. I authorize all hardware and software expenses. I also manage external resources, such as consulting or Web site design. I manage an infrastructure made up of mainframes, servers, and over 40,000 PCs. All this hardware will require Internet-related software."

If you want to reach an influential audience of 100,000 executives involved in Web projects, like David, make sure WebMaster is at the top of your media buy. For a WebMaster Media Planning Guide, send an email request to Mike Masters, Vice President, Sales at masters@cio.com or call him at 201-244-5510.

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FOR ART'S SAKE

There's no real need to write a lot about Adobe Systems Inc.'s work on the Web. A trip to the company's site tells most of the story and provides a benchmark for the kinds of graphically rich content its tools are meant to create.

Adobe starts with Bravo, a Java-based imaging platform that uses the industry standard PostScript. Bravo gives programmers the first integrated application programming interface for displaying, printing and managing high-fidelity images, line art and text for network-based graphics. The technology's printing architecture is also geared toward professional graphics and publishing applications, so the quality isn't lost in the transfer from screen to paper.

As Adobe rolls out its Web products, Bravo will be pretty much everywhere, starting with Vertigo, the company's interactive authoring application. Vertigo, which includes editing and player technologies, will enable designers to mix gorgeous graphics with sound and video for distribution over the Web or CD-ROM. The product integrates with Adobe PhotoShop, Adobe Illustrator and the rest of the family, making it easier to repurpose print content into multimedia creations.

For more information on Vertigo, check out the Web site at *www.adobe.com* or call 415 962-2630.

DESPERATELY SEEKING SOMETHING

Seeking is easy on the Web; it's the "ye shall find" part that's a crapshoot. The trouble is that most people aren't very good at defining what they want, and the Web isn't smart enough to figure it out for them.

Several vendors have fielded search tools that address this problem, but Inso Corp. takes a different approach. The company's Search Wizard isn't a search tool but rather a search prep tool: It helps users formulate specific, accurate queries and then sends them off to their favorite crawlers to carry them out.

Search Wizard works by taking a search item and bringing up all its possible connotations. An investor entering the word "stock," for example, would be told that her query has agricultural and culinary, as well as financial, implications. After clicking on "financial," she would see another list, with items such as securities, bonds or Nasdaq, which she could use to further narrow her meaning. Once the search is defined, the user clicks to launch it on Lycos, Yahoo or another of the usual suspects.

Of course, nothing is perfect. We tried out the tool by searching "Fox" for the latest on Mr. Murdoch's new cable venture. The categories returned ranged from "alternative beliefs" to viruses"; nada on broadcasting or media. See Inso at *www.inso.com* or call 617 753-6500.

Continued on Page 62

LOOK BUT DON'T TOUCH

Lovely to look at, delightful to browse, but if you download it...well, there's not much we can do about it.

That, until recently, was the plight of Web site owners, who were unable to prevent visitors from downloading and reusing their original content.

Then along came Maximized Software Inc. with its SiteShield content protector. SiteShield provides configuration files that enable webmasters to quickly identify images they want to safeguard. When someone requests such an image, the product intercepts it and transforms it into a protected format. That means the site visitor can view the file normally, but the browser displays only a broken image icon when he tries to save the file.

The product also prevents Web pirates from incorporating someone else's content into their sites by building live links to it. SiteShield combats such references by spotting out-of-domain requests and preventing unauthorized access to all types of page content, including images, audio, video and Java applets.

The product is a plug-in module that runs on Netscape Communications Corp., Microsoft Corp. and Apache Web servers. For more information, head on over to *www.maximized.com* or call 714 955-5800.

ILLUSTRATIONS BY JOHN CLARKE

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1. Are you involved in management or development of World Wide Web utilization at your organization?

☐ Yes ☐ No

2. Which of the following best describes your title within your organization? *(Check one only)*

☐ 1. Webmaster
☐ 2. CEO, President, Owner, Partner, General Manager
☐ 3. CIO/VP of Information Systems/MIS/DP
☐ 4. Dir/Mgr of Information Systems/MIS/DP
☐ 5. VP/Dir/Mgr of Networking & Communications Systems
☐ 6. CFO/VP/Dir/Mgr Finance/Controller
☐ 7. Consultant
☐ 8. VP/Dir/Mgr Accounting
☐ 9. VP/Dir/Mgr Engineering/Manufacturing
☐ 10. VP/Dir/Mgr Marketing/Sales
☐ 11. COO/VP/Dir/Mgr Operations/Administration/Purchasing/Human Resources
☐ 12. New Media Specialist
☐ 13. Content Producer/Developer/Editor
☐ 14. Systems Engineer/Programmer/Analyst
☐ 99. Other *(Please specify)* _____

3. What is your primary job function within your organization? *(Check one only)*

Technical Management

☐ 1. Webmaster
☐ 2. IS management
☐ 3. Networking/LAN management
☐ 4. Communications management

Corporate Management

☐ 5. Executive management
☐ 6. Marketing management
☐ 7. Financial management
☐ 8. Engineering management
☐ 9. Sales management
☐ 10. Operations management
☐ 99. Other *(Please specify)* _____

4. Which of the following best describes your organization's industry or function? *(Check one only)*

☐ 1. Manufacturer of Computers, Communication or Peripheral Equipment
☐ 2. Manufacturer of other products/processes not included above
☐ 3. Finance: Banking
☐ 4. Finance: Insurance
☐ 5. Finance: Real Estate, Credit or Securities
☐ 6. Wholesale or Retail Trade
☐ 7. Government: Federal, State or Local
☐ 8. Military
☐ 9. Transportation: Land, Sea or Air
☐ 10. Education: College, University, Library, Secondary, Other
☐ 11. Health Care/Pharmaceuticals/Medical Services
☐ 12. Utility: Communications
☐ 13. Utility: Electric, Gas, Sanitation
☐ 14. Accounting or Legal Services
☐ 15. Online Product and Service Provider
☐ 16. Communications: Publishing, Broadcast, Advertising, Public Relations
☐ 17. VAR, VAD, Systems Integrator
☐ 18. Computer and Data Processing Services and Software
☐ 19. Business Services *(other than computer)*
☐ 20. Research and Development
☐ 21. Aerospace/Defense Contractor
☐ 22. Mining/Construction/Petroleum/Refining/Agriculture
☐ 99. Other *(Please specify)* _____

5. What is the total number of employees:
(Check one only in each column)

	A. In your *entire org.*	B. At this *location*
1. >5000	☐	1. ☐
2. 1001-5000	☐	2. ☐
3. 500-1000	☐	3. ☐
4. <500	☐	4. ☐

6. What are the total annual revenues of your entire organization? *(Check one only)*

☐ 1. Over $1 Billion
☐ 2. $501 Million to $1 Billion
☐ 3. $101 to $500 Million
☐ 4. $25 to $100 Million
☐ 5. Under $25 Million

7. Approximately how much will your organization spend in the next 12 months on computers, software, equipment and services for World Wide Web implementation? *(Check one only)*

☐ 1. More than $1,000,000
☐ 2. $500,000 to $999,999
☐ 3. $100,000 to $499,999
☐ 4. $25,000 to 99,999
☐ 5. Less than $25,000

8. In which ways are you/will you be involved in World Wide Web development at your organization? *(Check all that apply)*

☐ 1. Specify, recommend, or purchase products and services used in Web development
☐ 2. Develop Web content and applications
☐ 3. Strategic planning of Web projects
☐ 4. Manage the Web staff and activities
☐ 5. NONE OF THE ABOVE

9. Which of the following are currently in use or planned for use in your organization?
(Check all that apply)

CLIENT OPERATING SYSTEMS

☐ 1. DOS
☐ 2. Macintosh
☐ 3. MVS
☐ 4. OS/2
☐ 5. OS/400
☐ 6. UNIX *(any variety)*
☐ 7. VM
☐ 8. VMS
☐ 9. VSE
☐ 10. Windows 3.X
☐ 11. Windows NT
☐ 12. Windows 95
☐ 13. Other *(Please specify)* _____
☐ 99. NONE OF THE ABOVE

SERVER/NET OPERATING SYSTEMS

☐ 1. Apple
☐ 2. Banyan-Vines
☐ 3. IBM-LanServer
☐ 4. IBM-PC Lan
☐ 5. Microsoft-LanManager
☐ 6. Novell-NetWare
☐ 7. Windows NT
☐ 8. Other *(Please specify)* _____
☐ 99. NONE OF THE ABOVE

PROTOCOLS

☐ 1. TCP/IP
☐ 2. OSI
☐ 3. SNA *(IBM)*
☐ 4. Appletalk
☐ 5. DECNet
☐ 6. IPX/SPX *(Novell)*
☐ 7. NetBIOS
☐ 8. X.25
☐ 9. NFS *(Sun)*
☐ 10. NetView
☐ 11. SNMP
☐ 12. Other *(Please specify)* _____
☐ 99. NONE OF THE ABOVE

10. Which commercial Internet access providers do you currently use or plan to use in the next 12 months?
(Check all that apply)

1.	AOL	☐
2.	AT&T	☐
3.	BBN	☐
4.	CompuServe	☐
5.	GEIS	☐
6.	IBM Global Network	☐
7.	MCI	☐
8.	Microsoft	☐
9.	Netcom	☐
10.	Prodigy	☐
11.	PSI	☐
12.	Sprint	☐
13.	U B Networks	☐
14.	UUNET	☐
15.	Other *(Please specify)*	☐ _____
99.	NONE OF THE ABOVE	☐

(OVER, PLEASE ▶▶▶)

11. Please check below all the products and services that you help acquire, either through approval, planning, recommendation or specification.
(Check all that apply)

COMPUTERS/PERIPHERALS

- ☐ 1. Desktop PCs/Notebooks
- ☐ 2. PC Servers
- ☐ 3. Workstations
- ☐ 4. Unix Servers
- ☐ 5. RISC Servers
- ☐ 6. Monitors
- ☐ 7. Printers
- ☐ 8. Storage/Tape Drives
- ☐ 9. CD-ROM Drives
- ☐ 10. UPS

INTERNETWORKING/LANS

- ☐ 11. Local Area Networks
- ☐ 12. Network Operating Software (NOS)
- ☐ 13. LAN Servers
- ☐ 14. Bridges/Routers/Gateways
- ☐ 15. Intelligent Hubs/Hubs

WIDE AREA NETWORKING/INTERNET ACCESS

- ☐ 16. Modems
- ☐ 17. PCMCIA Modems
- ☐ 18. T-1/T-3 Multiplexers
- ☐ 19. T-1/T-3 Services
- ☐ 20. Fractional T-1 Services
- ☐ 21. Dedicated Lease Lines
- ☐ 22. 56 Kbps Services
- ☐ 23. ISDN Services

SOFTWARE

- ☐ 24. E-mail/Workgroup
- ☐ 25. Database Servers
- ☐ 26. PC Databases/Front End
- ☐ 27. Communications/Remote Access Software
- ☐ 28. Image/Document Management Software
- ☐ 29. Video conferencing
- ☐ 30. Multimedia

WEB SOFTWARE

- ☐ 31. Web Browsers
- ☐ 32. HTML Authoring Tools
- ☐ 33. VRML Authoring Tools
- ☐ 34. Web Publishing Tools
- ☐ 35. Search Tools/Engines
- ☐ 36. Encryption Software
- ☐ 37. Firewalls/Security
- ☐ 38. Transaction Processing
- ☐ 39. Consulting Services
- ☐ 40. Outsourcing
- ☐ 41. Other *(Please specify)* _____

- ☐ 99. NONE OF THE ABOVE

12. Which of the following publications do you receive addressed to you personally?
(Check all that apply)

- ☐ 1. Interactive Week
- ☐ 2. Internet World
- ☐ 3. NetGuide
- ☐ 4. WebWeek
- ☐ 5. Wired

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Electronic Commerce Web applications? Open Market won't wait.

"Our clients don't want to publish text on the Internet, they want to sell things. Bluestone's Sapphire/Web is the development tool with the goods to help bring electronic commerce applications to market."

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President
Open Market, Inc.

To develop Web applications TODAY, they recommend Sapphire/Web.

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Open Market's OM-Transact software (www.openmarket.com) allows companies that open "Internet Stores" to take orders and collect payment without having to handle credit card transactions. Analysts say they could become an industry standard.

What tool do they recommend their clients use to build Web-based client/server applications? Sapphire/Web,® from Bluestone.®

Sapphire/Web

- **Visual: easy to use for novices, yet powerful enough for large development teams.**
- **Open: works with your HTML editor, server and browser of choice; allows you to keep pace with changing Web technology.**
- **Robust: generates C and C++ for the ultimate in power, performance and portability.**

Only Sapphire/Web lets you build Web-based client/server applications using a comprehensive set of visual tools. Just point and click to bind your database—including its native SQL, stored procedures, existing functions, executables, files and even legacy systems—to your front-end HTML forms. So Web applications that take orders, track packages or service customers come to life quickly and easily.

Enough talk. With Sapphire/Web, you can get started today. You might wait, but the Web won't.

Start today! Download Sapphire/Web FREE!

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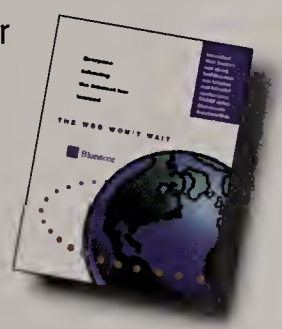

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The Web won't wait.

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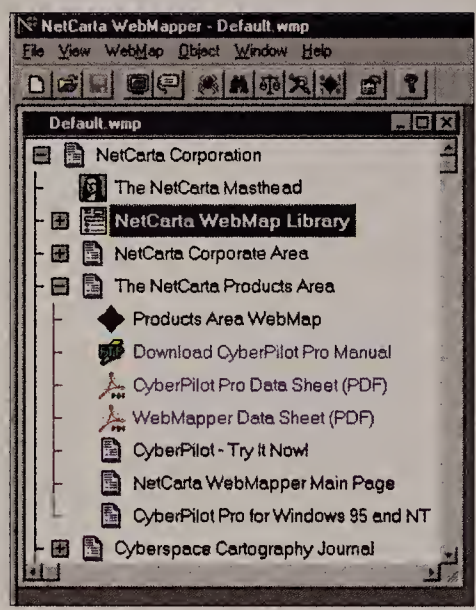
Map Your Web Site For Powerful Content Management



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NetCarta WebMapper™ *helps Webmasters and site developers solve management problems efficiently and create sites that are easier to navigate.*

- ✦ Integrates with your favorite authoring tools
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- ✦ Manages any local or remote Web site
- ✦ Publishes NetCarta WebMaps™ for fast navigation
- ✦ Copies an entire site onto a hard drive or CD-ROM
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Marcus Kaufman
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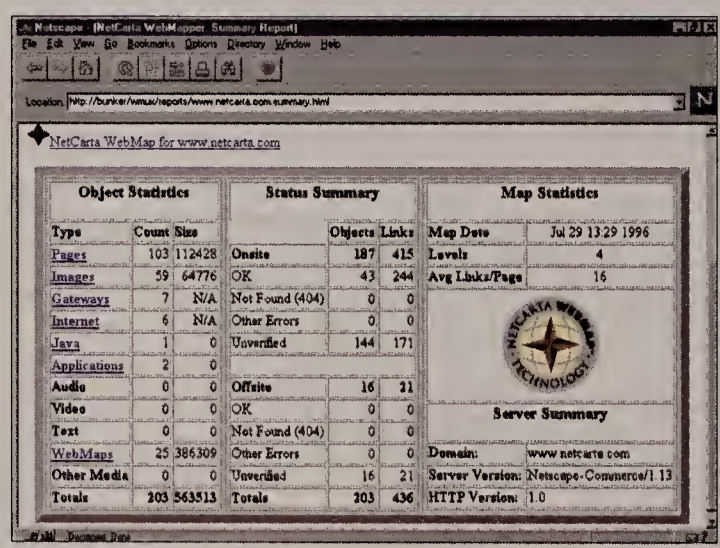
Novell Inc.



Summary report provides an overview of the site.

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- ✦ Formats reports in HTML. Reports include: site statistics, duplicate/obsolete objects, changed objects, linked table of contents, site index, content profile by media type, link analysis, link verification, and more!
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